SIBOGA-EXPEDITIE

Siboga-Expeditie

UITKOMSTEN

OP

ZOOLOGISCH, BOTANISCH, OCEANOGRAPHISCH EN GEOLOGISCH GEBIED

VERZAMELD IN

NEDERLANDSCH OOST-INDIË 1899—1900

AAN BOORD **H. M. SIBOGA** ONDER COMMANDO VAN

Luitenant ter zee 1e kl. G. F. TYDEMAN

UITGEGEVEN DOOR

Dr. MAX WEBER
Prof. in Amsterdam, Leider der Expeditie

(met medewerking van de Maatschappij ter bevordering van het Natuurkundig Onderzoek der Nederlandsche Koloniën)

LEIDEN
E. J. BRILL
1908

Siboga-Expeditie
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THE PROSOBRANCHIA OF THE SIBOGA EXPEDITION

BY

M. M. SCHEPMAN
Bosch en Duin near Utrecht (Holland)

PART I

RHIPIDOGLOSSA AND DOCOGLOSSA

WITH AN APPENDIX BY PROF. R. BERGH

With 9 plates and 3 textfigures

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PART I

RHIPIDOGLOSSA AND DOCOGLOSSA

WITH AN APPENDIX BY PROF. R. BERGH.

INTRODUCTION.

As the number of species of prosobranchiate Gastropods, collected during the cruise of the "Siboga" is rather large (the collection contains far more than two thousand bottles and tubes, besides a considerable number of boxes) I proposed to Prof. WEBER, to publish the results of my researches in four or five parts, in order to save priority. The first part dealing with the *Rhipidoglossa* and *Docoglossa* is now ready. It is the most interesting but I think the most difficult group to deal with, as the systematic position of many of the Trochidae and of the patelliform shells is very uncertain. By preparing the radulae of doubtful species, I have been able to throw some light in a few cases, and have been induced to erect some new genera. In many respects I have followed the systematic arrangement of FISCHER (Manuel de Conchyliologie etc. Paris, 1880—87) unless changes proved to be desirable on anatomical grounds or on account of other new investigations.

As to synonymy I have not tried to render it complete; as a rule I have only cited the author who first described the species, and those of the larger monographs I could consult; moreover I have cited the descriptions and figures of RUMPH, in the "Amboinsche Rariteitkamer", as this publication is in fact the only faunistic work on marine Mollusks of a considerable part of the East Indian Archipelago, and finally a few other authors, in whose works I found interesting particulars on, or better figures of the species mentioned in this part.

The number of species dealed with in this part, amounts to about 210, amongst which 68 which I consider to be new, moreover a few new varieties. In order to avoid as much as possible the description of species already known, I have in many cases, before describing them, asked the assistance of Mr. E. A. SMITH of the British Museum of Natural History, who with his usual kindness has compared the specimens with those of the conchological collections, for

which assistance I here express my thanks; especially such comparison is necessary, with a view on the numerous species of the brothers H. and A. ADAMS, as their descriptions are often very short and insufficient and have mostly not been accompanied by figures. I have to thank also many other persons, who assisted me by loaning books or specimens or by giving advice.

The conservation of the specimens was as a rule very good, however I think formol must be rejected if one cares to keep the shells in good condition; it seems that it renders the shells very brittle and their surfaces dull.

Those specimens to which an asterisk has been prefixed, have not been taken by the Expedition, but they belong to the collections of the Zoological Museum of the University or of the Royal Zoological Society of Amsterdam.

At the end of this part is annexed an appendix by Prof. R. BERGH, who had received amongst the Nudibranchs a few Prosobranchs, and has described them or has given anatomical particulars; a few of these species belong to the *Taenioglossa*, which will form the second part of the Prosobranchs.

GASTROPODA.

Order PROSOBRANCHIATA Milne Edwards.

Suborder SCUTIBRANCHIATA Cuvier.

Section RHIPIDOGLOSSA Troschel.

Fam. NERITACEA Lamarck.

Nerita Adanson.

1. *Nerita (Theliostyla) exuvia* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 779, N^{0} 646.
RUMPH. Amb. Rariteitkamer, p. 78, tab. 22, fig. N.
REEVE. Conch. Icon. Vol. IX, Nerita, fig. 1.
V. MARTENS. Martini-Chemnitz, Conch. Cab. Ed. II, Nerita, p. 12, Taf. 1, Fig. 17, 18; Taf. 4, Fig. 16—19.

Stat. 50. Bay of Badjo, West coast of Flores. Up to 40 M. 1 Spec.
Stat. 51. Madura-bay. Reef. 7 Spec.
Stat. 152. Wunoh-bay, N. W. coast of Waigeu-island. Reef. 1 Spec.
Stat. 277. Kulewatti-bay, Dammer-island. Reef. 1 Spec.

*2. *Nerita (Theliostyla) costata* Chemnitz.

CHEMNITZ. Conch. Cab. Vol. V, p. 243 and 299, Pl. 191, fig. 1966, 1967.
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 6.
V. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 62, Pl. 1, fig. 11, 12; Pl. 4, fig. 8—11.

*Java. 3 Spec.

3. *Nerita (Theliostyla) albicilla* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 778, N^{0} 640.
RUMPH. Amb. Rariteitkamer, p. 78, tab. 22, fig. 8.
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 64.
V. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 25, Taf. 3, Fig. 1—4, 6—9; Taf. 8, Fig. 1, 2.

*Java. 2 Spec.
*Amboina. 1 Spec.
Stat. 16. Bay of Kankamaraän, South coast of Kangeang. Shore. 4 Spec.
Stat. 19. Bay of Labuan Tring, West coast of Lombok. 18—27 M. 3 Spec.
Stat. 33. Bay of Pidjot, Lombok. Up to 22 M. 1 Spec.
Stat. 47. Bay of Bima near South fort. Shore. 6 Spec.
Stat. 50. Bay of Badjo, West coast of Flores. Up to 40 M. 1 Spec.
Stat. 51. Madura-bay. Reef. 1 Spec.
Stat. 53. Bay of Nangamessi, Sumba. Up to 36 M. 5 Spec.
Stat. 78. Lumu-Lumu-shoal, Borneo-bank. 34 M. 2 Spec.
Stat. 125. Sawan, Siau-island. Reef. 4 Spec.
Stat. 127. Taruna-bay, Sangir-island. Reef. 1 Spec.
Stat. 129. Kawio and Kamboling-islands, Karakalang-group. 23—31 M. 9 Spec.
Stat. 142. Laiwui, coast of Obi Major. Reef. 1 Spec.
Stat. 152. Wunoh-bay, N. W. coast of Waigeu-island. Reef. 9 Spec.
Stat. 193. Sanana-bay, East coast of Sula Besi. Reef. 1 Spec.
Stat. 225. Reef of Lucipara-island. 1 Spec.
Stat. 240. Banda. Reef. 5 Spec.
Stat. 296. Noimini, South coast of Timor. Reef. 4 Spec.
Stat. 299. Buka-bay, South coast of Rotti-island. Reef. 1 Spec.
Stat. 304. Lamakera. Reef. 1 Spec.

The specimens vary in the usual manner, being more or less dark, till nearly black, or with more or less conspicuous dark zones.

*4. *Nerita (Theliostyla) chamaeleon* Linné.

Linné. Syst. Nat. Ed. X, p. 779, N^0 644.
Rumph. Amb. Rariteitkamer, p. 77, tab. 22, fig. 6.
Reeve. Conch. Ic. Vol. IX, Nerita, fig. 60. (*stella*).
v. Martens. Martini-Chemn. Conch. Cab. Ed. II, p. 19, Pl. 2, fig. 13—16; Pl. 5, fig. 5—13.

*Java. 4 Spec.

var. *squamulata* Guillou.

Le Guillou. Revue Zool. 1841, p. 344.
Reeve. Conch. Ic. Vol. IX, Nerita, fig. 63.
v. Martens. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 19, Pl. 5, fig. 14, 15.

Stat. 47. Bay of Bima, near South fort. Shore. 12 Spec.
Stat. 86. Dongala; Palos-bay, Celebes. Reef. 4 Spec.
Stat. 131. Beo, Karakelang-islands. 13 M. 1 Spec.
*Java. 1 Spec.

The specimens belong without doubt to the var. *squamulata*, by their shape and sculpture. The basal spiral ribs are stronger and are arranged less close than in the type of the species.

*5. *Nerita (Theliostyla) reticulata* Karsten.

Karsten. Mus. Leskeanum, p. 296, Pl. 2, fig. 8.
Reeve. Conch. Ic. Vol. IX, Nerita, fig. 44. (*signata*).
v. Martens. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 22, Pl. 5, fig. 1—4.

*Java. 1 Spec.

6. *Nerita (Theliostyla) patula* Recluz.

RECLUZ. Revue Zool. 1841, p. 148.
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 84.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 52, 111, Pl. 7, fig. 8—13.

Stat. 33. Bay of Pidjot, Lombok. 22 M. 1 Spec.
Stat. 47. Bay of Bima, near South fort. Shore. 1 Spec.

v. MARTENS (l. c. p. 111) is in doubt if his *patula* is the same species as that of RECLUZ, as this author describes it, as having and epidermis and a smooth operculum, with a striated zone at the outer margin, like *N. polita*. I have often met with in collections, shells of *Nerita* with a false operculum, especially if bought from dealers. Both specimens of the Siboga collection, have the operculum as v. MARTENS describes it; that from Stat. 33 has the darkest shell.

As to an epidermis, the specimen of Stat. 33 is smoother than that of Stat. 47, and seems to have a very thin epidermis; the sculpture forms a passage to the var. *Beaniana* Recluz, the specimen from Stat. 47, agreeing in shape better with the figures of v. MARTENS.

7. *Nerita (Cymostyla) maxima* Chemnitz.

CHEMNITZ. Conch. Cab. V, p. 287, Pl. 190, fig. 1942, 1943.
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 18.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 29, Pl. 6, fig. 1—5.

Stat. 279. Roma. Reef. 11 Spec.
Stat. 296. Off Noimini, South coast of Timor. Reef. 1 Spec.
*Java. 2 Spec.
*Amboina. 2 Spec.

8. *Nerita (Cymostyla) semirugosa* Recluz, var. *subglobosa* Martens.

RECLUZ. Revue Zool. 1841, p. 102 (*semirugosa*).
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 17*a*, *b* (*maura*).
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 31, Pl. 6, fig. 9; Pl. 1, fig. 5, 6.

Stat. 80. Borneo-bank. 50—40 M. 1 Spec.

By the higher spire, this specimen belongs to the variety *subglobosa* Mart., it agrees also in colour, very well with his fig. 9.

9. *Nerita (Cymostyla) undata* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 779, N^0 645.
RUMPH. Amb. Rariteitkamer, p. 79, Pl. 22, fig. 4.
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 15*a* (*Le Guillouana*).
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 34, Pl. 6, fig. 10—16.

Stat. 19. Bay of Labuan Tring, West coast of Lombok. 18—27 M. 6 Spec.
Stat. 50. Bay of Badjo, West coast of Flores. Up to 40 M. 9 Spec.
Stat. 64. Kambaragi-bay, Tanah Djampeah. Reef. 5 Spec.

The specimens vary much in colour, from nearly white to very dark, both extremes live in the same localities.

10. *Nerita (Cymostyla) Spengleriana* Recluz.

RECLUZ. Proc. Zool. Soc. Lond. 1843, p. 201.
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 47 (*oleagina*).
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 39, Pl. 7, fig. 6, 7.

Stat. 16. Bay of Kankamaraän, South coast of Kangeang. 22 M. 1 Spec.
Stat. 51. Madura-bay. Reef. 1 Spec.
Stat. 142. Laiwui, coast of Obi Major. Reef. 1 Spec.
Stat. 165. N. E. side of Daram-island. East coast of Misool. Reef. 2 Spec.
Stat. 296. Noimini, South coast of Timor. Reef. 1 Spec.
Stat. 299. Buka-bay, South coast of Rotti-island. Reef. 1 Spec.
*Java. 2 Spec.

11. *Nerita (Cymostyla) striata* Burrow.

BURROW. Elements of Conch. p. 172, Pl. 20, fig. 8.
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 18 (*chrysostoma*).
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 37, Pl. 7, fig. 1—5.

Stat. 131. Beo, Karakelang-islands. 13 M. 7 Spec.

12. *Nerita (Cymostyla) flammulata* Recluz.

RECLUZ. Revue Zool. 1841, p. 180.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 46, Pl. 7, fig. 13, 14.

Stat. 86. Dongala, Palos-bay, Celebes. Reef. 2 Spec.
Stat. 131. Beo, Karakelang-islands. 13 M. 16 Spec.

The specimens are darker than that figured by v. MARTENS. Most of them show obviously the alternating larger and narrower concentric ribs.

13. *Nerita (Pila) plicata* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 779, N^0 642.
RUMPH. Amb. Rariteitkamer, p. 78, Spec. VI (*Valvata sulcata alba*).
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 42.
v. MARTENS. Martini-Chemn. Conch Cab. Ed. II, Nerita, p. 63, Pl. 10, fig. 6—10.

Stat. 16. Bay of Kankamaraän, South coast of Kangeang. 22 M. 1 Spec.
Stat. 33. Bay of Pidjot, Lombok. 22 M. 1 Spec.
Stat. 50. Bay of Badjo, West coast of Flores. Shore. 1 Spec.
Stat. 51. Madura-bay. Reef. 8 Spec.
Stat. 64. Kambaragi-bay, Tanah-Djampeah. Reef. 3 Spec.
Stat. 129. Kawio- and Kamboling-islands, Karkaralong-group. 23—31 M. 1 Spec.
Stat. 131. Beo; Karakelang-islands. 13 M. 1 Spec.
Stat. 165. North E. side of Daram-island, E. coast of Misool. Reef. 1 Spec.
Stat. 279. Roma. Reef. 1 Spec.
Stat. 296. Noimini, South coast of Timor. Reef. 2 Spec.
Stat. 301. Pepela-bay, East coast of Rotti-island. Reef. 2 Spec.
*Java. 9 Spec.
*Amboina. 2 Spec.

Only the specimen from Stat. 131 and one from Java, have regular black spots, arranged

in three zones; some specimens from Madura-bay are marked with a few scattered spots, the other specimens are whitish in different shades.

14. *Nerita (Ilynerita) planospira* Anton.

ANTON. Verzeichniss 1839, p. 30.
RUMPH. Amb. Rariteitkamer, p. 78. Sp. 4, (*granulata* 2d Sp.?)
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 38. (*atropurpurea*).
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 23, Pl. 4, fig. 4—7.

Stat. 19. Bay of Labuan-Tring, West coast of Lombok. 18—27 M. 1 Spec.
Stat. 86. Dongala, Palos-bay, Celebes. Reef. 1 Spec.

The reference to RUMPH is somewhat doubtful, his description being rather too short and not sufficiently characteristic to recognize the species with certainty.

15. *Nerita polita* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 778, N° 638.
RUMPH. Amb. Rariteitkamer, p. 77, Pl. XXII, fig. I, K.
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 2.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 72, Pl. 3, fig. 5, 10—15; Pl. 14, fig. 1—7.

Stat. 19. Bay of Labuan-Tring, W. coast of Lombok. 18—25 M. 1 Spec.
Stat. 225. Lucipara-island. Reef. 2 Spec.
Stat. 279. Roma. Reef. 1 Spec.

var. *Rumphii* Recluz.

RECLUZ. Revue Zool. 1841, p. 108.
RUMPH. Amb. Rariteitkamer, p. 78, Sp. 8 p.p., Pl. 22, fig. 7.
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 62*a—k*.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 74, Pl. 14, fig. 8—13.

Stat. 19. Bay of Labuan-Tring, W. coast of Lombok. 18—27 M. 3 Spec.
Stat. 47. Bay of Bima, near South fort. Shore. 10 Spec.
Stat. 51. Madura-bay. Reef. 2 Spec.
Stat. 86. Dongala, Palos-bay, Celebes. Reef. 4 Spec.
Stat. 152. Wunoh-bay, N. W. coast of Waigeu-island. Reef. 1 Spec.
*Java. 1 Spec.

The shell figured on Pl. 22, fig. 7, by SCHIJNVOET, in RUMPH's Amb. Rariteitkamer, seems to me to agree better with the variety than with the type, with which v. MARTENS (Rumphius Gedenkboek) identifies it; this figure shows distinctly the spiral riblike striae, characteristic for the variety.

16. *Nerita antiquata* Recluz.

RECLUZ. Revue Zool. 1841, p. 106.
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 5.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 81, Pl. 14, fig. 19—21.

Stat. 19. Bay of Labuan-Tring, W. coast of Lombok. 18—27 M. 1 Spec.
Stat. 47. Bay of Bima, near South fort. Shore. 4 Spec.
Stat. 50. Bay of Badjo, W. coast of Flores. Shore. 2 Spec.

17. *Nerita insculpta* Recl. var. *arata* Hombron & Jacquinot.

HOMBRON et JACQUINOT. Voy. au pole du Sud. Moll. Pl. 16, fig. 12, 13.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 88, Pl. 11, fig. 2, 3.

Stat. 165. North coast of Daram-island, East coast of Misool. Reef. 1 Spec.

The only specimen has on the posterior part of the last whorl only 20 ribs, as in the type, on the back-side, small intermediate threads make their appearance, and become soon thicker, so as nearly to equal the primary ribs; only the basal zone remains free from intermediate ribs; the total number at the outer margin amounts to 34. The colour is darker than in the figures of v. MARTENS, resembling the var. *pacifica* Recl., but the columellar margin has only very slight indications of teeth.

18. *Nerita (Amphinerita) incerta* v. d. Busch.

v. D. BUSCH in: Philippi, Abb. u. Beschr. neuer oder wenig gek. Conch. I, p. 85, Nerita, Pl. I, fig. 6.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 83, Pl. 11, fig. 19—21.

Stat. 1. Madura-strait. 37 M. 1 Spec.
Stat. 165. N. E. side of Daram-island, East coast of Misool. Reef. 16 Spec.

This species, which was known by v. MARTENS only from Java and Mindanao, seems to be widely distributed. I possess numerous shells from the Sangir-islands, and have seen in the Leyden Museum specimens from Larantuka, one from Timor, one from the Red Sea; the specimens vary in colour; that from Madura-strait is nearly typical, dark with a few white spots on the back; those from Stat. 165 are:

a. dark (black or grey) with small white spots; 5 Spec.
b. more or less dark with small white spots and 3 indistinct darker zones; 7 Spec.
c. dark grey, with numerous much larger white spots and dark zones; 2 Spec.
d. grey, mixed with white, dark zones very indistinct; 2 Spec.

19. *Nerita (Melanerita) argus* Recluz.

RECLUZ. Revue Zoologique, 1841, p. 150.
REEVE. Conch. Ic. Vol. IX, Nerita, fig. 53.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II. Nerita, p. 93, Pl. 11, fig. 17, 18.

Stat. 33. Bay of Pidjot, Lombok. 22 M. 1 Spec.

The only specimen is separated from the next species, chiefly on account of the columellar teeth being much more conspicuous, and of the well developed granules and folds of the pillar lip; the shell is however nearly smooth.

20. *Nerita (Melanerita) ocellata* Guillou.

LE GUILLOU. Revue. Zool. 1841, p. 344.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Nerita, p. 95, Pl. 11, fig. 12—16.

Stat. 19. Bay of Labuan-Tring, W. coast of Lombok. 18—27 M. 1 Spec.

Though in this specimen the ribs are more conspicuous, than in the preceding species, which ought to be the contrary, the characters of the aperture are those of *ocellata* viz. a nearly smooth pillar lip, with very small teeth on its margin. As v. MARTENS (l. c. p. 96) mentions also intermediate specimens, I should incline to the opinion that *N. ocellata* has only varietal rank.

Neritina Lamarck.

1. *Neritina (Neritaea) auriculata* Lamarck.

LAMARCK. Encyclop. Méthodique. Vers. II, Pl. 455, fig. 6.
—— Animaux s. vert. Ed. Desh. Vol. VIII, p. 572.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 30, Pl. 6, fig. 13—15, 24—27.
—— Weber, Zool. Ergebn. Band IV. Süss- u. Brackw. Moll. p. 76.

Stat. 33. River near Pidjot, Lombok. 4 Spec.

Three of the specimens are very young and scarcely recognizable. As far as I know, this species has not yet been recorded from Lombok.

*2. *Neritina (Neritaea) bicanaliculata* Recluz.

RECLUZ. Journ. de Conch. Vol. I, 1850, p. 145.
REEVE. Conch. Ic. Vol. IX, Neritina, fig. 79.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 35, Pl. 9, fig. 3, 4.

*Java. 2 Spec.

This species was only recorded from the Philippines, the largest specimen is very characteristic.

3. *Neritina (Neritaea) crepidularia* Lamarck, var. *exaltata* Recluz.

RECLUZ. Journ. de Conch. Vol. I, 1850, p. 65, Pl. 3, fig. 3.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 44, Pl. 7, fig. 1, 2.

Stat. 71. Near Makassar. 1 Spec.

4. *Neritina (Neritaea) pulligera* Linné.

LINNÉ. Syst. Nat. Ed. XII, p. 1253.
RUMPH. Amb. Rariteitkamer, p. 76, Pl. 22, fig. H.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 49, Pl. 1, fig. 4, 5.
—— Weber, Zool. Ergebn. Band IV. Süss- u. Brackw. Moll. p. 77.

Stat. 82. Batu Pangal, Mahakkam-river; Borneo. 1 Spec.
Stat. 131. Beo, Karakelang-islands; shore. 19 Spec.

*var. *sumatrana* Dautzenberg.

DAUTZENBERG. Contribution à la Faune Mal. de Sumatra. Ann. Soc. Mal. Belg. Tom. XXXIV, p. 23, Pl. 1, fig. 12.

*Java. 13 Spec.

The specimens from Java, perfectly agree with those from Sumatra and with the description of DAUTZENBERG. If the locality "Java" be correct, it is a new addition to the fauna of that island.

5. *Neritina (Neritaea) variegata* Lesson.

LESSON. Voy. de la Coquille, p. 378.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 98, Pl. 10, fig. 11—17.
—— Weber, Zool. Ergebn. Band IV. Süss- u. Brackw. Moll. p. 78.

Stat. 131. Beo, Karakelang-islands; shore. 1 Spec.
Stat. 180. North coast of Pulu Kelang; small river. 1 Spec.

*var. *strigillata* Lamarck.

LAMARCK. An. s. vert. Ed. Desh. Vol. VIII, p. 574.
REEVE. Conch. Icon. Vol. IX, Neritina, fig. 31 (*turrita*).
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 105, Pl. 11, fig. 18, 19.

*Java. 14 Spec.

The specimen of Stat. 131 has no red spot on the pillar lip.

6. *Neritina (Neritaea) turrita* Chemnitz, var. *Cumingiana* Recluz.

RECLUZ. Revue Zool. 1842, p. 76.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 105, Pl. 11, fig. 20, 21.

Stat. 131. Beo, Karakelang-islands; shore. 1 Spec.

*7. *Neritina (Neritaea) semiconica* Lamarck.

LAMARCK. An. s. vert. Ed. I, Vol. VI, p. 187.
MOUSSON. Land- u. Süssw. Moll. v. Java. p. 80, Pl. 12, fig. 11.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 105, Pl. 11, fig. 22, 23.

*Java. 9 Spec.

The specimens are large, the largest, which is decollated, measures still 33 Mill., if not decollated, it would have reached 40 Mill. or more.

I have mentioned *N. semiconica* as a distinct species, because TROSCHEL has found differences between the radulae of this form and *N. turrita*.

8. *Neritina (Neritaea) communis* Quoy & Gaimard.

QUOY & GAIMARD. Voy. de l'Astrolabe. Zool. Vol. III, p. 195, Pl. 65, fig. 12—14.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 113, Pl. 11, fig. 1—9.
—— Weber, Zool. Ergebn. Band IV. Süss- u. Brackw. Moll. p. 79.

Stat. 131. Beo, Karakelang-islands; shore. 1 Spec.
Stat. 200. Rivulet near Bara-bay, North coast of Buru-island. 1 Spec.

Both specimens are of a simple character, yellowish with waved black lines.

9. *Neritina (Neritaea) sulculosa* v. Martens.

v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 69, Pl. 8, fig. 23—26 (*spirialis*), p. 278 (*sulculosa*).

Stat. 204. Between islands of Wowoni and Buton. 75—94 M. sand with dead shells. 2 Spec.

Both specimens are young and rather worn, this last perhaps on account of the marine locality, the dead shells probably having been washed from a brook, or river to the sea. They agree sufficiently with a specimen from Celebes in my possession. One of the specimens (the other being broken) and that from Celebes, have a very small tubercle near the base of the pillar-edge, though v. MARTENS says (l. c. p. 69) "ohne Leiste".

10. *Neritina (Neritodryas) dubia* Chemnitz.

CHEMNITZ. Conch. Cab. V, p. 324, Pl. 124, fig. 2019, 2020.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 136, Pl. 12, fig. 1—7.

Stat. 131. Beo, Karakelang-islands; shore. 3 Spec.
Stat. 200. Rivulet near Bara-bay, North coast of Buru-island. 1 Spec.

11. *Neritina (Neritodryas) subsulcata* Sowerby.

SOWERBY. Conch. Illustr. N^0 50.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 142, Pl. 12, fig. 11, 12.

Stat. 131. Beo, Karakelang-islands; shore. 1 Spec.
Stat. 180. North coast of Pulu-Kelang, small river. 2 Spec.

One of the specimens from Stat. 180 has a yellowish streak near the outer margin of the operculum, this is also the case in a specimen from Ternate.

12. *Neritina (Clithon) brevispina* Lamarck. Pl. VIII, fig. 4.

LAMARCK. An. s. vert. Ed. I, Vol. VI, p. 185.
RUMPH. Amb. Rariteitkamer, p. 78, Pl. 22, fig. O.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 156, Pl. 17, fig. 1—4, 9.
—— Weber, Zool. Ergebn. Band IV, Süss- u. Brackw. Moll. p. 79.

Stat. Nusa-laut, small river. 1 Spec.
Stat. 19. Bay of Labuan-Tring, West coast of Lombok, river. 5 Spec.
Stat. 33. Bay of Pidjot, Lombok, river. 32 Spec.

The specimens belong to the variety *mutica* v. Martens, only a few ones from Stat. 33 have one or two very short spines, the colour of the specimens from this locality is very variable.

According to v. MARTENS, (Mon. Neritina, p. 158) the radula of this species should be variable; SCHACKO should have found in spiniferous specimens from Amboina, the mushroomlike tooth with 24 very sharp denticles, and the uncini with 8 denticles, whereas those from Timor should have those teeth with smooth margins. I have examined the radulae of two specimens from Stat. 33, which agree in nearly every point; the rhachidian tooth has a larger, nearly square cusp, the first laterals are oblong, with a cusplike margin, the two small laterals are covered by the mushroomlike tooth (Pl. VIII, fig. 4), its margin is provided with about 30 small denticles, the uncini have about 10 small teeth on the outer margin.

*13. *Neritina (Clithon) diadema* Recluz.

RECLUZ. Revue Zool. 1841, p. 277.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 154, Pl. 15, fig. 22—26.

*Java. 2 Spec.

14. *Neritina (Clithon) subocellata* Schepman.

SCHEPMAN. Notes from the Leyden Museum. Vol. VII, p. 49, Pl. 4, fig. 3, 3*a*, 3*b*.
—— Nachrichtsbl. der deutschen Mal. Gesellsch. 1903, p. 20.

Stat. 33. River near bay of Pidjot, Lombok. 4 Spec.

The specimens from Lombok, are less smooth than those from Java and Celebes, but agree in every other respect, with those at my disposal. I find no spines, but this may be due in part, to the corrosion of 3 of the specimens. Those from Celebes, mentioned by GREDLER, (Nachrichtsbl. 1902, p. 62) do not belong to this species, but to *N. subpunctata* Recl., and one, I think, to *N. brevispina* Lam., as I have observed by ocular inspection, by the kindness of GREDLER. The largest specimen from Lombok, is slightly larger than the described types, being about 15 Mill. in height and in diameter, instead of 13 and 14. Lombok is a new locality.

15. *Neritina (Clithon) squarrosa* Recluz.

RECLUZ. Proc. Zool. Soc. Lond. 1842, p. 174.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 162, Pl. 16, fig. 13—18.
—— Weber, Zool. Ergebn. Band IV, Süss- u. Brackw. Moll. p. 80.

Stat. 33. River near bay of Pidjot, Lombok. 3 Spec.

The specimens are small, probably young, without spines, one with indistinct bands. Not yet recorded from Lombok.

16. *Neritina (Clithon) subpunctata* Recluz.

RECLUZ. Proc. Zool. Soc. Lond. 1843, p. 199.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 179, Pl. 18, fig. 19, 20, 22—24.

Stat. 33. River near bay of Pidjot, Lombok. 2 Spec.
Stat. 234. Nusa laut, hot river. 1 Spec.

var. *glandiformis* v. Martens.

v. MARTENS. l. c. p. 180, Pl. 19, fig. 3, 4.

Stat. 33. River near bay of Pidjot, Lombok. 18 Spec.

The specimens of var. *glandiformis* v. Mart. agree with those named by v. MARTENS from Adonara, but they are smaller. From both localities the colour-markings are much less conspicuous than in the type, not only by incrustation, but even in perfectly clean specimens, seen by transparent light. A few of the specimens from Lombok (a new locality) have traces of spines, like those from Adonara, recorded by v. MARTENS (l. c. p. 181).

17. *Neritina (Clithon) olivacea* Recluz.

RECLUZ. Proc. Zool. Soc. Lond. 1842, p. 172.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 183, Pl. 19, fig. 5—7.

Stat. 180. River N. coast of Pulu Kelang. 2 Spec.
Stat. 234. Nusa laut, hot river. 4 Spec.

The specimens from Nusa laut are small, though probably adult, measuring only from 13 to 18 Mill. in their largest diameter. The largest specimen from Pulu Kelang, is 24 Mill. in this dimension.

18. *Neritina (Clithon) flavovirens* Busch.

v. D. Busch. Phil. Abb. u. Beschr. neuer Conch. I, Neritina, Pl. 1, fig. 6.
v. Martens. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 184, Pl. 19, fig. 1, 2, 12.
—— Weber, Zool. Ergebn. Band IV, Süss- u. Brackw. Moll. p. 81, Pl. 10, fig. 12, 15, 16.

Stat. 33. River near bay of Pidjot, Lombok. 1 Spec.
Stat. 179. Kawa-bay, West coast of Ceram, river. 1 Spec.

The only specimen from Lombok has a few spines, which are not mentioned by v. D. Busch, but v. Martens has known this form, without mentioning the locality, and mentions such specimens from Celebes, collected by Weber, mixed with a spineless specimen. I possess 10 specimens from several localities on Java, namely 4 from Besuki, one of which spined; 4 from Palabuan, all spined, and 2 spineless from the Pamenug-river. Lombok is a new locality for the species.

19. *Neritina (Clithon) ualanensis* Lesson.

Lesson. Duperey, Voy. Coquille. Zoologie II, p. 379.
v. Martens. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 193, Pl. 20, fig. 1—24.
—— Weber, Zool. Ergebn. Band IV, Süss- u. Brackw. Moll. p. 82.

Stat. 71. Near Makassar. 5 Spec.
Stat. 125. Sawan, Siau-island. Reef. 1 Spec.

The specimens from Stat. 71 belong to the vars. *conferta* v. Martens and *polydelta* v. Martens, with an intermediate specimen, that from Stat. 125, belonging to var. *polydelta* contains a small crustacean, belonging to the Paguridae, which accounts for its being captured on the reef.

Fam. Neritilidae Schepman. Pl. VIII, fig. 5.

The examination of the radula of the typical species of the subgenus *Neritilia* v. Martens, has convinced me, that it not only belongs to a separate genus, but even to a new family, which I have placed provisionally at the end of *Neritina*, though I think it is not its proper place. The species has no rhachidian tooth, as far as I can see; though I have examined the uncoloured and coloured radula I could not detect it; the first lateral (5,1) are very thin and transparent, and only by colouring I could make out the complicated shape; it has some affinity with the corresponding tooth in the *Neritidae*, but its position is much more in a perpendicular direction, the margin seems to be reflected; at its proximal side, there is a projection or knob, also with a reflected margin, apparently ending in a hook; by the smallness and thinness, it is not easy to be satisfied on every particular, moreover a slight alteration in position, essentially

alters the appearance; at the distal end, I can detect only one of the small teeth, of which 2 are usually found in *Neritidae* and *Neritopsidae*. The tooth corresponding to the mushroomlike teeth of the last named families, (5,2) has an erect position, quite different from the horizontal position in *Neritidae*, its basal part is triangular, with the shortest margin below, the reflected margin is provided with about 15 small denticles; the uncini (5, U) are very numerous, each with about 8 denticles; the arrangement of the teeth on the radula, resembles that of *Hydrocena*. This radula agrees with that of *Neritopsis*, by its wanting the rhachidian tooth, but otherwise it is quite different; from the *Neritidae* it differs by the same character and by the shape and number of teeth. Its place may be near some genus of operculate landshells. How far the other species, located by v. MARTENS in *Neritilia*, agree in structure of the radula, must be made out by further researches, especially of those species, without an appendix at the operculum. I think, *Neritilia* has as much or even more right to stand as a separate family than *Neritopsis*. As the family characters are the same as those of the subgenus as defined by v. MARTENS, I have not repeated them.

Neritilia v. Martens.

1. *Neritilia rubida* Pease.

PEASE. Proc. Zool. Soc. Lond. 1865, p. 514.
—— American Journ. of Conch. III, p. 285, Pl. 24, fig. 5.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Neritina, p. 244, Pl. 23, fig. 19, 20.

Stat. 115. Kwandang, North Celebes, river. 11 Spec.
Stat. 142. Obi Major, river. 8 Spec.

This species is the second *Neritilia* from Celebes, the first from Obi. It was only known from the Pacific, where it lives on several Polynesian isles. I at first thought, it might be a new species, as I found the spire rather blunt, the pillar lip not quite flat, and observed moreover a small sharp angle at the basal part of the aperture, near the junction of the outer and basal margins; this seems to be a character of the group, not yet observed by authors, I find the same angle in *N. succinea* Recl. from Guadeloupe and in *N. Manoeli* Dohrn from West Africa. Opposed to the assertion of v. MARTENS, I see also a very small list, behind the lower muscle-scar, inside the aperture, but I find the same in the specimen of *N. rubida* Pse, received from v. MARTENS. So it seems to have escaped his attention. I have convinced myself, by means of the point of a needle, that it is truly a convexity and no optical illusion, as is sometimes the case, for instance in some *Trochidae*.

Septaria Férussac.

1. *Septaria suborbicularis* Sowerby.

SOWERBY. Cat. of Shells Earl of Tankerv. Appendix p. 10, N^0 1092.
RUMPH. Amb. Rariteitkamer, p. 123, Pl. 40, fig. O.
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Navicella, p. 31, Pl. 6, fig. 5—14.
—— Weber, Zool. Ergebn. Band IV, Süss- u. Brackw. Moll. p. 84.

Stat. 33. Bay of Pidjot, Lombok. River. 7 Spec.
Stat. 50. River near Labuan Badjo. 1 Spec.
Stat. 180. North coast of Pulu Kelang. River. 8 Spec.

2. *Septaria tessellata* Lamarck, var. *lineata* Lamarck.

LAMARCK. Encycl. Meth. Pl. 456, fig. 2 (*lineata*).
—— An. s. vert. Ed. Desh. VIII, p. 564 (*lineata*).
v. MARTENS. Martini-Chemn. Conch. Cab. Ed. II, Navicella, p. 38, Pl. 8, fig. 7—9.

Stat. 33. Bay of Pidjot, Lombok; river. 1 Spec.

The only specimen, which is not adult, is not quite as narrow as the figure of v. MARTENS, but much more so, as his figs 1 and 3 of the same plate, which v. MARTENS names var. *compressa* with the subvar. *lineata*.

Fam. PHENACOLEPIDAE.

Phenacolepas Pilsbry.

1. *Phenacolepas galathea* Lamarck.

LAMARCK. An. s. vert. Ed. Desh. Vol. 7, p. 539 (*Patella*).
DELESSERT. Recueil de Coq. Pl. 23, fig. 10.
CHENU. Manuel de Conch., fig. 2815.

Stat. 115. East side of Pajunga-Island, Kwandang-bay. Reef. 1 Spec.

The only specimen has a length of 12 Mill. but has no juvenile appearance, though it is considerably smaller than LAMARCK's specimens, which are described as having a lenght of 7 to 8 lines, the shell is rather strong and thick.

PILSBRY has named the genus *Phenacolepas* (The Nautilus, Vol. V, 1891, p. 88) the name *Scutellina* being twice preoccupied. Since he has given (The Nautilus, Vol. XIV, 1900, p. 61) a list of the species, "more complete than that in the Manual of Conchology". In this list *Ph. galathea* is mentioned, but not in the Monograph. *Scutellina asperulata* A. Adams and *costata* A. Adams, according to E. A. SMITH, should be synonyms. ADAMS however has only mentioned them in his "Genera of Shells" p. 461, but they have not been described. The shell resembles much "*Patella pectinata*" Born, but may be distinguished at once, by the position of the muscle-scar.

2. *Phenacolepas radiata* n. sp. Pl. I, fig. 1.

Stat. 282. Between Nusa Besi and the N.E. point of Timor. Reef. 1 Spec.

Shell small, depressed, oval, inaequilateral, yellowish, with scarcely elevated, distant, brown, radiating ribs, crossed by faint, irregular, concentric striae, more conspicuous at large intervals. Apex posterior, placed at nearly $^{11}/_{12}$ of the length, obtuse, compressed, directed to the left, brown (perhaps by erosion). Front and side slopes convex, posterior slope concave. The shell is covered by a yellowish epidermis. Interior brown, yellow in front and towards the margin, with brown radii. Muscle-scar open in front.

Long. 3, lat. $2^1/_4$, alt. 1 Mill.

It is not without some hesitation, that I have described this species as a *Phenacolepas*; it is much smoother than most of the described species, and has a conspicuous epidermis. I know no species with which to compare it. As the soft parts wanted, I was not able to get sufficient certainty.

Pseudococculina n. g.

Shell patelliform, white, with a posterior, inclined apex and a compressed, subspiral nucleus. Inside porcellaneous, muscle-scar horseshoe-shaped, interrupted over the head. Animal with a plumate gill, at the right side of the head; the right tentacle thickened; two epipodial filaments at the posterior part of the foot.

Radula with large rhachidian teeth, cusp wanting or very obsolete, first laterals triangular, followed by 3 smaller, contorted laterals, with distinct cusps, a large cusped fifth lateral, and numerous uncini.

The radulae of the species described hereafter, seem to be different from those of similar mollusks, however I think it is nearest allied to *Phenacolepas*, by the shape of the first lateral; in other respects it differs sufficiently, to make it necessary to establish a new genus. The shells resemble very much those of *Cocculina*, the only difference, if it prooves to be constant, is that no regular radial sculpture is to be found, as is the case in all the species of *Cocculina* I have examined. In the species described as *Ps. rugosoplicata*, it is present in some degree, but of a different character, consisting of coarse short striae, quite overwhelmed by the concentric sculpture.

1. *Pseudococculina rugosoplicata* n. sp. Pl. I, fig. 2; Pl. VIII, fig. 6.

Stat. 221. 6° 24′ S., 124° 39′ E. 2798 M. 4 Spec.

Shell small, white, elevated, oval, thin, the margin rests entirely on a plane surface; front slope the largest, convex, side slopes irregularly convex, being slightly compressed at some distance from the apex, posterior slope slightly concave, apex blunt, placed at about $^2/_3$ of the total length; the nucleus wanting, by a strong erosion of the apex. Sculpture consisting of irregular concentric rugosities or wrinkles, generally more distant from each other towards the apex, more crowded towards the margin, with a tendency to form lamellae; on some parts the upper side of the rugosities has coarse, short, riblike radiant striae, wanting in other places, perhaps by erosion. Inside smooth.

Long. 6, lat. $4^1/_2$, alt. $2^3/_4$ Mill.

The characters of the shell, as well as the external characters of the animal, agreed sufficiently with those of the genus *Cocculina*, but the radula is quite different.

The rhachidian tooth (R) is elongate with convex sides, it has no reflected cusp, the upper margin being only irregularly waved, near the base an oval spot seems to be thickened, the first lateral tooth (1) is triangular, also without distinct cusp, but with a reflected or thickened upper margin, followed by three laterals (2, 3, 4), which are little different from each other, with a winged body, having the appearance of being turned outwards, the cusp standing at the distal side; their cusps are simple, the next lateral (5) has a quadrate body with a thickened stalk

at its median line, and a cusp consisting of a sharp tooth at the proximal side, and a wing-like part on the distal side, with a slightly denticulate margin. Of the numerous uncini (U), the proximal ones, which are the largest, have simple cusps, while those placed more outwards have small denticles.

This species may be at once distinguished from the next one, by its very characteristic sculpture, it is a much higher shell; the radulae though being very similar in general construction, are sufficiently distinct.

2. *Pseudococculina granulata* n. sp. Pl. I, fig. 3; Pl. VIII, fig. 7.

Stat. 88. 0° 34'.6 N., 119° 8'.5 E. 1301 M., grey and yellow mud. 1 Spec.

Shell small, white, depressed, oval, very thin, broader towards the front, the ends slightly raised, front and side-slopes slightly convex, posterior slope nearly straight, with a very small impression below the nucleus, this latter smooth, compressed, subspiral, placed at a little more than $^6/_{11}$ of the total length of the shell. Sculpture consisting of a few concentric striae, moreover the whole surface is covered by very small, crowded granules of an irregular oval, potatolike shape, sometimes two or three granules are confluent, they are placed in oblique rows. Inside smooth.

Long. $5^1/_2$, lat. $3^1/_2$, alt. 1 Mill.

The shell of this species, in every respect, save sculpture, calls in mind the species of *Cocculina*. As the animal was not in a sufficient state of preservation, I could not observe the external characters, but a look at the radula, shows at once that this species is congeneric with the preceding one, and quite different from *Cocculina*. The rhachidian tooth (R) has an oblong shape, with convex sides towards the middle, concave towards the top, with slightly reflected margin, the upper margin without cusp, but irregularly convex; about the centre of this tooth, an irregular spot seems to be thickened and slightly coloured (one could think, this is the cusp, were it not that in the allied species, a similar spot stands quite near the base) the first lateral (1) has a subtriangular shape, with a thickened or reflected upper margin, followed by three laterals, (2, 3) of a shape similar to those of the preceding species, with a simple cusp, the outermost lateral (5), is so much concealed by the large uncini, that its shape could not be traced, it seems to have a simple cusp, without the sharp denticle of the preceding species. The proximal uncini (U) are strongly hooked and simple, the median ones seem to be serrated and the exterior one again simple.

Fam. Cocculinidae Dall.

Cocculina Dall.

1. *Cocculina subquadrata* n. sp. Pl. I, fig. 4; Pl. VIII, fig. 8.

Stat. 173. 3° 27'.0 S., 131° 0'.5 E. 567 M., fine yellow grey mud. 3 Spec.

Shell large, white, patelliform, oblong, depressed, sides subparallel, the shell being slightly broader behind, the ends are broadly rounded and slightly elevated, the anterior slope, which

is a trifle longer than the posterior one, is nearly straight, only a little convex towards the subcentral apex in the largest specimen, more convex in the smaller ones, posterior slope slightly concave, more so just behind the apex, side-slopes nearly straight, except for a more or less pronounced compression, at some distance from the apex. Nucleus compressed, subspiral, smooth. The surface of the shell is covered by regular, very fine, concentric growth-striae and irregular grooves, crossed by faint radiating striae, more conspicuous on the rare spots, where a yellowish epidermis still adheres. Interior of shell porcellaneous.

Long. 17, lat. $11^1/_2$, alt. 5 Mill.

In the smaller specimens the posterior slope seems to be shorter, apparently on account of the margin being not intact.

The species resembles in many respects *C. Rathbuni* Dall (Proc. U. S. Nat. Mus. 1881, p. 402) figured in the "Blake Gastropoda", Pl. 25, figs. 7, 7*a*, but the new species is less depressed and more elongate. *C. laevis* Thiele (in v. MARTENS, die beschalten Gastrop. der deutschen Tiefsee-Exp. 1898—99, p. 127, Pl. 5, fig. 11, 12) is the nearest ally from the Indian Ocean, but is not as broad, and has more regularly curved sides, being probably much less radiately striated.

The radula has much resemblance with that of *C. laevis* Thiele, the shape of the rhachidian tooth (R) is really the same, but the upper and side margins are thickened and may be considered as a cusp, the first lateral (1) is much more elongate, not subtriangular, its cusp and that of the second lateral (2) has three denticles, the cusp of the third lateral (3) is simple, the fourth (4) seems to be narrower towards the lower part of the body. The uncini (U) have cusps with a few denticles. The foot has the two epipodial filaments, which characterize the Section *Cocculina* s. str. of DALL.

2. *Cocculina oblonga* n. sp. Pl. I, fig. 5; Pl. VIII, fig. 9.

Stat. 126. 3° 27'.1 N., 125° 18'.7 E. 2053 M., hard sand. 2 Spec.

Shell white under a rather thick epidermis, patelliform, oblong, not much depressed, with a rather acute apex, with curved sides, passing imperceptibly in the regularly rounded ends, which are slightly elevated; anterior slope slightly longer than the posterior one, slightly concave, especially in the lower part, posterior- and side-slopes concave. Apex subcentral, but placed on the posterior half. Nucleus pointed, directed backwards, not spiral, smooth.

The shell is covered by a very conspicuous, yellowish-brown, fibrous epidermis, which gives to the shell the appearance of being strongly radiately ribbed. Under this epidermis, the shell has numerous concentric and radiating striae, much less conspicuous than those of the epidermis, producing a somewhat cancellated sculpture; interior of shell white.

Long. 9, lat. $5^1/_4$, alt. 3 Mill.

The nearest ally seems to be *C. radiata* Thiele, of which species I could compare a typical specimen, by the kindness of Dr. MÖBIUS; this had only a few patches of epidermis, which are however much thinner, yellowish and less fibrous. In *C. radiata* the front slope is convex, the posterior and side-slopes are also very slightly convex, the front slope is the shortest. The new species is stronger radiately striated, especially on those parts, provided with

the epidermis, but also when this has been removed. The apex in the new species is sharper and more elevated than in *radiata*.

The animal has two epipodial filaments near the posterior part of the foot. The radula differs in many respects from that of *C. radiata*. The rhachidian tooth (R) is nearly quadrate, with convex sides and front margin, and sharp corners, the front and side margins are thickened, the first has a very small simple cusp. The first lateral (1) has an oblong body and probably in a normal position 2 or 3 denticles, the second lateral (2) is still more elongated, with 2 or 3 denticles, the third (3) has a simple cusp; the fourth (4) much larger lateral, has a very large cusp, with a smaller denticle below it. The uncini are hooked, with simple cusps. The number of denticles in the laterals is rather inconstant, on the right side the first one has 2 or 3 denticles, but on the left side only one; in the second the number varies from 2 to 3 on the right side, on the left I constantly see 3 denticles. The most conspicuous differences from *C. radiata* are: the quadrate rhachidian tooth, which in *radiata* according to THIELE (Die beschalten Gastrop. der deutschen Tiefsee-Exp. p. 152, Pl. 6, fig. 13) is much longer in proportion to its breadth, and in its simple cusp, which in *radiata* has small denticles, (THIELE, l. c. p. 153).

3. *Cocculina cingulata* n. sp. Pl. I, fig. 6.

Stat. 137. Channel between Makjan and Halmaheira. 472 M., fine, dark muddy sand. 1 Spec.

Shell small, yellowish, patelliform, rather depressed, oval, with moderately curved subparallel sides and bluntly rounded ends. Front slope the largest, convex, posterior slope nearly straight, especially under the apex, but slightly convex towards the margin, side slopes slightly convex. Sculpture consisting of (for the small shell) conspicuous, regular, concentric lirae, separated by much broader intervals, which are crossed by much weaker radiant striae. The nucleus, which is placed at about $^2/_3$ of the length of the shell, is slightly compressed, directed backwards, and is spiral on the right side. Inside porcellaneous.

Long. $2^5/_6$, lat. $2^1/_4$, alt. 1 Mill.

The animal seems to have two short but broad epipodial appendages on each side of the posterior end of the foot, but on account of the smallness of the much shrunken animal, they are very inconspicuous.

This species seems to be allied to *C. leptalea* Verrill, (Trans. Connecticut Acad. VI, p. 202, Pl. 32, fig. 20, 20*a*, 20*b*) according to the description and figures copied by PILSBRY (Man. of Conch. Vol. XII, p. 133, Pl. 2, fig. 7, 8) but the nucleus is more central in the new species, the outline of the base is broader in proportion to its length, it is more depressed than *leptalea*. The sculpture seems to be similar, however the radial striae are less conspicuous, the concentric lirae are less crowded near the apex.

4. *Cocculina ovata* n. sp. Pl. I, fig. 7; Pl. VIII, fig. 10.

Stat. 312. Saleh-bay, North coast of Sumbawa. 274 M., fine, sandy mud. 3 Spec.

Shell small, patelliform, oval, with subparallel sides, moderately depressed, white under a thin, yellowish, fibrous epidermis, ends broadly rounded and elevated, the anterior slope, which

is conspicuously longer than the posterior one, is slightly convex, but nearly straight towards the apex, posterior slope a little concave near the apex and towards the margin, convex in the middle part, side-slopes straight, only a little concave near the margin, with a very small concavity near the apex. Nucleus compressed, subspiral, smooth under a lens, but with very small pits under the microscope; it is placed at about $^{6}/_{11}$ of the total length.

Sculpture consisting of rather strong, elevated, concentric striae, less strong but more numerous than in the preceding species, crossed by weaker, but still very conspicuous radiating striae, giving to the shell a somewhat cancellated appearance. Inside of the shell smooth.

Long. $5^{1}/_{2}$, lat. $4^{3}/_{4}$, alt. 2 Mill.

The foot of the animal with 2 epipodial filaments.

This species is closely allied to *C. alveolata* Schepm. but differs by its much more elevated apex and weaker sculpture; from *C. leptalea* Verrill and *C. cingulata* Schepm. it differs by its weaker concentric striae, and the nucleus is placed much more near the centre.

The radula has a rhachidian tooth (R) of an oblong shape, broader near the front than at the posterior margin, with curved sides, the front margin is convex and like the side margins thickened, this thickening forms in the centre a point directed towards the base; this tooth has a small simple cusp. The elongated first (1) and second (2) laterals, have tricuspid cusps, the third (3) has only a simple cusp. The cusp of the fourth lateral (4) is large, divided into two denticles, the lower or distal one is the smallest. The uncini (U) have rather short, thick cusps, with indistinct denticles.

5. *Cocculina alveolata* n. sp. Pl. I, fig. 8; Pl. VIII, fig. 11.

Stat. 312. Saleh-bay, North coast of Sumbawa. 274 M., fine, sandy mud. 3 Spec.

Shell small, patelliform, oval, depressed, pellucid, white, with small patches of a thin, yellowish epidermis; ends broadly rounded and elevated; anterior, posterior and side-slopes convex, with only a slight depression behind the depressed apex. Nucleus very much depressed, compressed, scarcely spirally striated under a lens, but under the microscope the nucleus is covered by rows of conspicuous alveoli (much more conspicuous than in the preceding species). It is placed at about $^{5}/_{9}$ of the length of the shell, the front slope being the largest.

The sculpture consists of conspicuously elevated concentric striae, of which a few are stronger than the rest, they are crossed by radial striae, which are but slightly weaker, a little waved and make the concentric striae slightly beaded, especially the stronger ones. The shell is still more cancellated than in the preceding species. Inside shining.

Long. $4^{1}/_{2}$, lat. $3^{1}/_{4}$, alt. $1^{1}/_{2}$ Mill.

Foot of the animal with epipodial filaments.

This species, as already mentioned, differs from the preceding one, by its depressed apex and stronger sculpture, moreover by the convex slopes and the much larger pits or alveoli of the nucleus, this character being not visible in *C. ovata* with the same lens as in the present species.

I examined the radula of one of the specimens. This agreed in every respect with those of the other species of *Cocculina*, examined by THIELE and by me, but the median tooth wanted;

as however the shell-characters and the animal agree very well with the other species, I think the radula will be only abnormal. The first and second laterals (1, 2) have three denticles at their cusps, that of the third (3) is simple and the fourth (4) has the same characters as in the preceding species, being however broader, the uncini have small denticles. The peculiar sculpture of the shell, seemed at first to be favourable to generic separation, but it is connected to those species with smooth nucleus, by the preceding species.

6. *Cocculina subcompressa* n. sp. Pl. I, fig. 9; Pl. VIII, fig. 12.

Stat. 302. 10° 27'.9 S., 123° 28'.7 E. 216 M., sand and coral sand. 2 Spec.

Shell rather small, white, patelliform, oblong, compressed, moderately elevated, the ends broadly rounded and conspicuously elevated, sides subparallel, being slightly broader in front. The anterior slope, which is a trifle longer than the posterior one, is slightly convex, the posterior has a small depression near the apex, and is from thence nearly straight, the side slopes are decidedly convex. The apex is subcentral, with a subspiral, compressed nucleus, which is smooth even under the lens. The shell is covered by a rather thin, yellowish, fibrous epidermis, which is conspicuously wave-striated. Sculpture of the shell consisting of elevated radial striae, which are crossed, at irregular intervals, by concentric striae, these latter are more crowded near the apex. Inside of shell smooth, white.

Long. $6^{7}/_{8}$, lat. $4^{3}/_{4}$, alt. $2^{1}/_{2}$ Mill.

This species might be mistaken for the young of *C. subquadrata* Schepm., but its shape is more regular, it is much less depressed, the epidermis is much coarser, the sculpture more conspicuous.

The foot of the animal has 2 epipodial filaments.

The rhachidian tooth (R) of the radula is much elongated, with subparallel sides, however the body is broader towards the anterior margin. It has a small, simple cusp, the anterior and side margins are thickened. The other teeth have the usual shape, the first (1) and second (2) laterals have a cusp with three small denticles, the cusp of the third lateral (3) is simple. That of the fourth (4), if seen in situ, has the usual large cusp, with a small secondary one. If turned outwards it has on the other side of the chief cusp, still two smaller ones. I think however this will be the case in many of the described species, as I have often observed it more or less distinctly. The uncini (U) have a few small denticles, better visible in reversed teeth.

7. *Cocculina striata* n. sp. Pl. I, fig. 10; Pl. IX, fig. 1.

Stat. 173. 3° 27'.0 S., 131° 0'.5 E. 567 M., fine, yellow grey mud. 2 Spec.

Shell rather small, patelliform, oblong, depressed, pellucid, white, ends regularly rounded, slightly elevated, sides convex. The anterior slope considerably longer than the posterior one, both a little convex, with a small depression behind the nucleus, side slopes more convex. Apex depressed, with a compressed, subspiral, smooth nucleus, placed at $^{13}/_{20}$ of the length of the shell. The surface of the shell, covered by a rather thick, yellowish-brown, fibrous epidermis, having

the appearance of being, wave-striated by elevated radial striae. The sculpture of the shell, on spots where the epidermis has been lost, consists of elevated radial striae, a few concentric striae are not very conspicuous. Inside of shell white, smooth, with a few impressed striae, especially near the margin of the front slope.

Long. 5, lat. 3, alt. $1^1/_4$ Mill.

This species resembles by its shape and epidermis, my *C. oblonga*, but is distinguished by its sharper striae and the position of the nucleus, which in *striata* is placed much more posteriorly. Both specimens are broken, I have described the best one, which gives a perfect idea of the species, as only one side of the posterior slope is slightly defective. The epidermis of the other specimen, is less fibrous, the striae are more crowded, this however may be individual.

The foot has two epipodial filaments.

The radula has a rhachidian tooth (R) with a subquadrate body, with an elongate front margin, the sides are slightly convex, the front angles rounded, the tooth has a simple cusp, larger than in any of the preceding species; the front and side margins are thickened; the first (1) and second (2) laterals have tricuspid, the third (3) a simple cusp; the fourth (4) has the usual shape, but is more elongate, than in most species. The uncini (U) have very inconspicuous denticles.

From the descriptions of the shells and radulae of the new species of *Cocculina*, it is clear that species nearly allied in their shells, still differ in their radulae, especially the rhachidian tooth is characteristic, for though the first and second laterals, have nearly always three denticles, they prooved to be inconstant. The third lateral has invariably a simple cusp and a body, the shape of which is not easily traced with sufficient accuracy, on account of its being always more or less covered by the fourth lateral, which is also less characteristic, and varies very much in appearance, if it is turned a trifle towards the right or left. The value of the rhachidian tooth for distinguishing the species, is shown at once, by comparing this tooth in the present species (*striata*) with that of *C. oblonga*, the shells differing only in the position of the nucleus and slight secondary characters.

The epipodial filaments were not always very conspicuous, however I have found traces of them in every species.

Fam. Turbinidae.

Phasianella Lamarck.

1. *Phasianella histrio* Reeve.

Reeve. Conch. Ic. Vol. XIII, Phasianella. fig. 15.

Stat. 240. Banda. 9—45 M., black sand. 2 Spec.

Banda is a new locality for this species, which Reeve has mentioned only from the Philippines. I have seen also subfossil specimens from Celebes.

Turbo Linné.

1. *Turbo petholatus* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 762, N° 533.
RUMPH. Amb. Rariteitkamer, p. 71, Pl. 19, fig. D.
REEVE. Conch. Ic. Vol. IV, Turbo, fig. 12.
KIENER. Coq. Viv. Turbo, p. 50, Pl. 24, fig. 1.
TRYON. Man. of Conch. Vol. X, Turbo, p. 193, Pl. 40, fig. 14.

Stat. 53. Bay of Nangamessi, Sumba. Up to 36 M., coral sand. 1 Spec.
Stat. 240. Banda. 9—45 M., black sand. 2 Spec.

The "Siboga"-specimens are very young and display two characters, which often want in museum-specimens, and as far as I know, are not recorded by authors, namely: 1° that the whole shell is covered by microscopic striae, running nearly spirally, but in an oblique direction from behind and above towards the aperture, 2° that the embryonic whorls are quite different from the rest of the shell, showing at the suture short projections which render it angular, as if the embryonic shell should have been spined, moreover these whorls are plicated, and have near the middle of their upper surface, a kind of keel, which is elegantly beaded, the uppermost whorl is slightly immersed.

2. *Turbo (Senectus) sparverius* Gmelin.

GMELIN. Syst. Nat. Ed. XIII, p. 3594.
REEVE. Conch. Ic. Vol. IV, Turbo, fig. 30.
KIENER. Coq. Viv. Turbo, p. 49, Pl. 21, fig. 1 (*margaritaceus*).
TRYON. Man. of Conch. Vol. X, p. 194, Pl. 47, fig. 26.

Stat. 81. Pulu Sebangkatan, Borneo-bank. 34 M., coral bottom and Lithothamnion. 1 Spec.
Stat. 90. 1° 17'.5 N., 118° 53' E. 281 M., coral, sand and stones. 1 Spec.
Stat. 131. Beo, Karakelang-islands. 13 M., mud and sand. 3 Spec.

The specimens from Stat. 81 and 90 are very young; consequently their identification remains somewhat uncertain. It seems strange that the specimen from Stat. 90, should have lived at this depth; it may have entered the dredge with a drifting piece of wood or seaweed.

3. *Turbo (Senectus) aurantius* Kiener.

KIENER. Coq. Viv. Turbo, p. 55, Pl. 27, fig. 3.
TRYON. Man. of Conch. Vol. X, p. 198, Pl. 48, fig. 30 (*argyrostomus* var.).

Stat. 58. Seba, Savu. Up to 27 M., sand. 1 Spec.

The only specimen is unfortunately very young, measuring only 17 Mill. in altitude, while KIENER's type is 43 Mill. The operculum and soft parts wanting. I cannot agree, without new material, with TRYON's views, who has considered this species to be a variety of *T. argyrostomus*. The habitat was unknown to KIENER and TRYON.

4. *Turbo (Senectus) chrysostomus* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 762, N^0 535.
RUMPH. Amb. Rariteitkamer, p. 71, Pl. 19, fig. E.
REEVE. Conch. Ic. Vol. IV, Turbo, fig. 28.
KIENER. Coq. Viv. Turbo, p. 18, Pl. 4, fig. 2.
TRYON. Man. of Conch. Vol. X, p. 200, Pl. 40, fig. 19.

Stat. 37. Sailus-Ketjil, Paternoster-islands. Reef. 1 Spec.
Stat. 89. Pulu Kaniungan-Ketjil. Reef. 1 Spec.
Stat. 193. Sanana-bay, East coast of Sula Besi. Reef. 2 Spec.

5. *Turbo (Senectus) intercostalis* Menke.

MENKE: in Philippi, Mart. Chemn. Conch. Cab. Ed. II, Turbo, p. 42, 68, Pl. 11, fig. 3, Pl. 16, fig. 4—5.
KIENER. Coq. Viv. Turbo, p. 83, Pl. 39, fig. 1.
? TRYON. Man. of Conch. Vol. X, Pl. 43, fig. 51, Pl. 47, fig. 22.

Stat. 50. Bay of Badjo, West coast of Flores. Reef. 1 Spec.
Stat. 71. Makassar. 1 Spec.
Stat. 174. Waru-bay, N. coast of Ceram. Reef. 1 Spec.
Stat. 193. Sanana-bay, E. coast of Sula-Besi. Reef. 1 Spec.

The identification of this species is difficult. Authors don't agree about its specific value. TRYON cites as synonyms: *disjunctus* Anton, *concinnus* Phil., *articulatus* Reeve, *elegans* Phil., *radiatus* Reeve. v. MARTENS wrote me, that *T. Winteri* Phil. is identical. The largest specimen from Stat. 193, has squamous lirae, that from Makassar, though collected alive, is much worn and remains uncertain. The other specimens are mere shells.

6. *Turbo (Senectus) ticaonicus* Reeve.

REEVE. Proc. Zool. Soc. Lond. 1842, p. 185.
—— Conch. Ic. Vol. IV, Turbo, fig. 23.
KIENER. Coq. Viv. Turbo, p. 87, Pl. 32, fig. 2.
TRYON. Man. of Conch. Vol. X, p. 202, Pl. 47, fig. 22, Pl. 43, fig. 51.

Stat. 7. Near reef of Batjulmati (Java). 15 M. 1 Spec.
Stat. 16. Bay of Kankamaraän, S. coast of Kangeang. 22 M., mud. 1 Spec.
Stat. 34. Labuan Pandan, Lombok. Reef. 7 Spec.
Stat. 37. Sailus-Ketjil, Paternoster-islands. 27 M. and less, coralsand. 4 Spec.
Stat. 50. Bay of Badjo, W. coast of Flores. Up to 40 M., mud and sand. 1 Spec.
Stat. 51. Madura-bay. Shore. 3 Spec.
Stat. 131. Beo, Karakelang-islands. Reef. 4 Spec.
Stat. 299. Buka- or Cyrus-bay, S. coast of Rotti-island. Reef. 2 Spec.
*Amboina. 1 Spec.

It is often very difficult, to separate the species of the subgenus *Senectus*, after shell characters; the specimens mentioned above are not umbilicate, and only show in some specimens a very small umbilical slit, which character seems to distinguish this species from *T. concinnus* Phil. and *intercostalis* Mke. After having examined the radula of a rather doubtful specimen,

I see it agrees as good as may be desired, with the figure of TROSCHEL (Gebiss der Schnecken, Pl. 19, fig. 11) and is quite different from his figure of the radula of *T. concinnus* (l. c. Pl. 19, fig. 9). This concerns particularly the lateral teeth with large cusps, as the shape of the rhachidian tooth can not easily be traced.

7. *Turbo (Senectus) gemmatus* Reeve. Pl. VI, fig. 11.

REEVE. Proc. Zool. Soc. Lond. 1848, p. 50.
—— Conch. Ic. Vol. IV, Turbo, fig. 62.
TRYON. Man. of Conch. Vol. X, p. 206, Pl. 44, fig. 68, 69.

Stat. 33. Bay of Pidjot, Lombok. 22 M. 3 Spec.
Stat. 99. North-Ubian. 16—23 M. Lithothamnion-bottom. 3 Spec.
Stat. 109. Pulu-Tongkil, Sulu-Archipelago. 13 M. Lithothamnion-bottom. 1 Spec.
Stat. 240. Banda. 18—36 M. Lithothamnion-bottom. 3 Spec.
Stat. 313. Dangar Besar, Saleh-bay. Up to 36 M. Sand, coral and mud. 15 Spec. — Reef. 2 Spec.
Stat. 315. Sailus Besar, Paternoster-islands. Up to 36 M. Lithothamnion-bottom. 2 Spec.

Only one specimen from Stat. 313, has the typical colour, as described by REEVE namely: uniformly red; the other specimens vary much in colour and markings, some specimens are nearly typical, varying from light orange-red to dark coral-red, and a few are olive-green; nearly all the specimens are marked with white spots or flames, often mixed with dark or black granules. Many of them have a row of granules next the suture, forming a necklace of white and black. There is a tendency to have four such zones on the bodywhorl, the second at the shoulder, the third lower, the fourth near the base, occupying as a rule the first, fourth, seventh and eleventh or twelfth row of granules, but as there is some variation in the sculpture, there may be some rows more or less, in most cases, I see very small intermediate granules. The columella is surrounded by a thicker rib at its base, which may be indicated as crenate, this rib is yellowish-white, with darker yellow in the interstices. This lighter colour extends in a few specimens over the base of the shell. In some specimens, more rows of granules are variegated with dark and white, giving to the shell a very beautiful mottled appearance. The granules are mainly strongly developed, but in two specimens they are somewhat obliterated. The operculum, which as far as I am aware, has not yet been described, is slightly oval, one specimen being 10 Mill. in its largest diameter and 9 Mill. in breadth; the inner surface is covered by a light brown cuticle, darker towards the outer margin and towards the margin of the outer whorls, the number of which seems to be four; the outer one is very broad, the nucleus is subcentral, but approaches the basal and columellar margins. The external surface is porcelain-white, very thick near the left upper part, less so on the right side; it is covered with not very conspicuous, somewhat vermiform rugosities, and has a marked depression on the lower half, slightly to the left, nearly opposite to the nucleus on the internal side. The right margin is smooth and shining.

8. *Turbo (Senectus) margaritaceus* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 764, N° 545.

Stat. 53. Bay of Nangamessi, Sumba. Up to 36 M. Coralsand. 1 Spec.

The only specimen is a very young dead one, with rather smooth ribs, so I have applied the name *margaritaceus*, as the specimen was too poor, to decide of it might belong to *T. argyrostomus* Lin., now taken by most authors as a synonym or variety.

9. *Turbo (Senectus) sp.*?

Stat. 78. Lumu-Lumu-shoal, Borneo-bank. Shore. 3 Spec.
Stat. 213. South-island. Reef. 4 Spec.

There are in the collection some small shells, belonging to the genus *Turbo* and probably to the subgenus *Senectus*, which are probably young, but I am unable to state, to which species they belong. They are very diversified in colour, less so in sculpture, but agree in the white operculum. I doubt that they belong to one and the same species. Those from Station 78 belong I think, to two species, those from the South-island to two or three.

10. *Turbo (Marmorostoma) porphyrites* Martyn.

MARTYN. Universal Conchol., Pl. 70.
REEVE. Conch. Ic. Vol. IV, Turbo, fig. 53, fig. 19 (*versicolor*).
KIENER. Coq. Viv. Turbo, p. 71, Pl. 7, fig. 2, Pl. 36, fig. 6.
TRYON. Man. of Conch. Vol. X, p. 215, Pl. 50, fig. 58.

Stat. 19. Bay of Labuan Tring, West coast of Lombok. 18—27 M. Coralsand. 5 Spec.
Stat. 47. Bay of Bima near South fort. 55 M. Coralsand. 2 Spec.
Stat. 50. Bay of Badjo, West coast of Flores. Up to 40 M. Sand. 4 Spec.
Stat. 51. Madura-bay. Reef. 5 Spec.
Stat. 86. Dongala; Palos-bay, Celebes. Reef. 1 Spec.
Stat. 127. Taruna-bay, Great Sangir-island. 45 M. Sand. 2 Spec.

The specimens vary much in colour, one from Madura-bay, one from Stat. 50 and both from Stat. 127, are very dark, and approach, or may belong to var. *lugubris* Kiener (l. c. Pl. 28, fig. 2). Their operculum is also darker, than in more typical specimens. Many have the orange-red bands. Two of the specimens from Stat. 50, agree very well with the figure of *T. mespilum* in FISCHER's Monograph (Coq. Viv. p. 73, Pl. 35, fig. 2) but this name seems to belong to another species or variety, not to be found in the "Siboga" collection.

Most authors call *T. versicolor* Gmel. a synonym of *T. porphyrites* Martyn, though TROSCHEL observed differences in the radula; as it is scarcely possible to make out, to which forms his shells belonged, and TROSCHEL has dissected only one specimen of *T. porphyrites*, I have followed the first method.

Guildfordia Gray.

1. *Guildfordia yoca* Jousseaume.

JOUSSEAUME. Le Naturaliste 1899, p. 48.

Stat. 251. 5° 28′.5 S., 132° 0′.5 E. 204 M. Hard coralsand. 2 Spec.
Stat. 253. 5° 48′.2 S., 132° 13′ E. 304 M. Grey, hard clay. 1 Spec.

Of the specimens from the first locality, one specimen is very young, its largest diameter,

without the spines, being only 10 Mill.; its upper surface being quite smooth, in accordance with the other specimens. The other specimen from Stat. 251 is a broken shell. The third specimen from Stat. 253, though still young is a splendid shell. At first I thought it would be a new species, as I found some differences with the original description, which Dr. JOUSSEAUME had the kindness to copy for me, but after subsequent correspondence, JOUSSEAUME stated that he found the characters I had observed, also on the upper whorls of his shell. The "Siboga"-specimen is very light brownish, not purple-brown, with only 6 whorls instead of 7, the upper whorls are smooth, then follows the last whorl with scarcely 2 rows of granules, instead of 7 or 8, towards the keel it has very irregular radiating ribs, which leave however a nearly smooth zone above the keel, with only a few spiral striae; the base is less convex than the upper part, I find no rose-coloured line round the umbilical callosity. The diameter, without the spines, is 29 Mill., the altitude 17 Mill. As the shell from Stat. 251, with a diameter of 32 Mill., has already 6 rows of granules near the aperture, and the other characters agree, I can, after the assertions of JOUSSEAUME, find no reason to describe a new species. Only by direct comparison, it would be possible to find more characters, which could justify a new species. The operculum in the two living specimens is oval, thick, with the nucleus in the external lower corner; the outer surface is slightly rugose, by irregular wrinkles, almost parallel with the basal margin of the operculum. The nucleus is marked by an olive spot.

Astralium Link.

1. *Astralium (Pseudastralium) abyssorum* n. sp. Pl. II, fig. 1.

Stat. 12. 7° 15′ S., 115° 15′.6 E. 289 M. Mud and broken shells. 4 Spec.
Stat. 59. Western entrance Samau-strait. 390 M. Coarse coralsand. 1 Spec.
Stat. 89. Pulu Kaniungan Ketjil. Shore. 1 Spec.[1]).
Stat. 139. 0° 11′ S., 127° 25′ E. 397 M. Mud, stones and coral. 1 Spec.
Stat. 156. 0° 29′.2 S., 130° 5′.3 E. 469 M. Coarse sand. 4 Spec.
Stat. 159. 0° 59′.1 S., 129° 48′.8 E. 411 M. Coarse sand. 4 Spec.
Stat. 279. 10° 39′ S., 123° 40′ E. 520 M. Mud and sand. 1 Spec.

Shell trochiform, flattened below, imperforate (except in a very young specimen) whorls 7, the upper ones with flattened sides, the last slightly convex; the sculpture of the upper whorls, consists of a row of small, close-set beads at the suture, being foldlike in the second whorl, they become larger, round and more remote on the next whorls, where they form the only sculpture, till on the ultimate or penultimate whorl, spiral rows of scales make their appearance, beginning with are single row, above the lower suture, they reach the number of 9 on the last whorl, near the aperture. Of these rows, eight are complete, while the lowest one is interrupted by the spines, which are present on all the whorls, except the embryonic one. These spines amount to 14 on the last whorl; they vary in length, are depressed, and provided on the upper surface, with radiating lirae. The beads of the upper whorls persist on the last one, where they number 20 or more. The sutures are deep, channelled, bordered above by the spiniferous

1) This locality is most probably a lapsus calami for Stat. 98. 6° 9′ N., 120° 21′ E. 350 M. Sand.

keel. Young specimens are nacreous and nearly colourless on the upper surface, with only a light flesh-red tint, which is more apparent on the penultimate and ultimate whorls, these two being in a fine specimen (from Stat. 59) yellow near the suture. Base with a nearly perpendicular zone below the keel, bearing about 4 rows of scales, similar to those of the upper surface, then flat, with radiating, riblike and nine concentric lirae, which are scaly near the periphery and beaded towards the centre. Colour of the base yellowish, its centre covered by a rounded, porcellaneous pad, which spreads in the most adult specimen over a large space of the base, being more circumscribed towards the aperture (especially in younger specimens) where it ends in an obuse, toothlike angle. Aperture squarely-oval, upper part of the outer margin curved, thin, nacreous, columellar margin thick, rounded, basal part rather thin and slightly expanded. Interior of the aperture nacreous, but not strongly iridescent, smooth; the margin only slightly crenulated by the spiral lirae.

In one very young specimen, a small umbilical slit is distinctly present, it is surrounded by a row of white beads, which seem to be covered as soon as the callous pad becomes more developed. Operculum oval, thick, its outer surface white, convex near the margins, slightly impressed near the centre, where it is also slightly tuberculiferous. Its inner surface is flat, brown, with two broad and about ten narrower whorls, around a subcentral nucleus.

Lat. (without spines) 24, alt. 17, apert. alt. 8, lat. 11 Mill.

This species varies more or less in the altitude of the spire, even in specimens of about the same diameter, in the place where the spiral rows of scales appear and in the length of the spines. I have hesitated in erecting a new subgenus for it, but I could not locate it in any of the existing subgenera. It has somewhat the appearance of *Guildfordia*, but differs in its suture being spiniferous in the upper whorls; the callous pad of the base is not provided with a pit as in *Guildfordia*. The subgenus may be characterised by the slender spines and the shape of the porcellaneous pad. I think its nearest ally is *Turbo (Calcar) henicus* Wats. (Challenger Exp. part 62, p. 130, Pl. 6, fig. 11) the description agreeing in many particulars, but it may be distinguished at once, by that species being beaded instead of scaly as in the new species. The operculum has many features in common.

The radula of one of the smaller specimens, has given only an imperfect result, by its great brittleness; in cleaning it, it fell in pieces. As far as I can judge, it has much affinity with that of *Bolma*.

2. *Astralium (Bolma) modestum* Reeve, var. *girgyllus* Reeve.

REEVE. Conch. Ic. Vol. XIII, Trochus, fig. 53.
KIENER. Coq. Viv. Vol. X, Calcar, p. 6, Pl. 76, fig. 1.
TRYON. Man. of Conch. Vol. X, p. 230, Pl. 55, fig. 65.

Stat. 100. 6° 11′ N., 120° 37′.5 E. 450 M. Dead coral. 1 Spec.

The only specimen is a dead shell, with the spines broken; the suture is shallower, the whorls are less inflated, than in the only specimen I could compare. (*A. girgyllus* is only known from China, but the circumstance that it has been collected at such a great depth, with

dead corals, may account for this more extended range. DUNKER (Ind. Moll. Maris Jap. p. 130) says that *A. modestum* is variable in sculpture.

3. *Astralium (Bolma) turcicus* Reeve.

REEVE. Proc. Zool. Soc. Lond. 1848, p. 50.
—— Conch. Ic. Vol. IV, Turbo, fig. 60.
KIENER. Coq. Viv. Turbo, p. 93, Pl. 42, fig. 3.
SMITH. Zool. Coll. of H. M. S. "Alert" p. 504, Pl. 44, fig. U—U².
TRYON. Man. of Conch. Vol. X, p. 230, Pl. 48. fig. 35.

Stat. 285. Near South coast of Timor. 34 M. Lithothamnion-bottom. 2 Spec.

It is with some doubt, that TRYON places this species in *Bolma*, and indeed, the shell and operculum, agree very well with *Turbo*, the base of the aperture being angularly expanded. The operculum is convex, with only a slight depression opposite to the subcentral nucleus. The spines of the shell in young specimens, seem to have induced TRYON, to give the species its present position in the system.

4. *Astralium (Cyclocantha) calcar* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 762, N° 538.
RUMPH. Amb. Rariteitkamer, p. 73, Pl. 20, fig. I.
REEVE. Conch. Ic. Vol. XIII, Trochus, fig. 52*a*.
KIENER. Coq. Viv. Trochus, p. 27, Pl. 23, fig. 1 (*aculeatum* Gmel.).
TRYON. Man. of Conch. Vol. X, p. 231, Pl. 52, fig. 27, 29, 30; Pl. 56, fig. 74.

Stat. 50. Bay of Badjo, West coast of Flores. Up to 40 M. Sand. 1 Spec.
Stat. 60. Haingsisi. Reef. 1 Spec.
Stat. 93. Pulu Sanguisiapo, Tawi-Tawi-islands, Sulu-Archipelago. Reef. 1 Spec.
Stat. 131. Beo, Karakelang-islands. Reef. 3 Spec.
Stat. 234. Nalahia-bay, Nusa-laut-island. Reef. 3 Spec.
Stat. 250. Kilsuin, West coast of Kur-island. 20—45 M. Coral and Lithothamnion. 2 Spec.
*Amboina. 1 Spec.

The specimens vary much in shape, some specimens could as well be located with the variety *helicinum*, and are associated with the type, only on account of longer spines or flatter apex or more conspicuously detached whorls.

var. *helicinum* Gmelin.

GMELIN. Syst. Nat. Ed. XIII, p. 3600, N° 48.
REEVE. Conch. Icon. Vol. XIII, Trochus, fig. 52*b*.
KIENER. Coq. Viv. Trochus, p. 27, Pl. 23, fig. 3.
TRYON. Man. of Conch. Vol. X, p. 232, Pl. 52, fig. 28, 31.

Stat. 16. Bay of Kankamaraän, South coast of Kangeang. Shore. 1 Spec.
Stat. 142. Laiwui, coast of Obi Major. Reef. 1 Spec.
Stat. 250. Kur. Reef. 1 Spec.

The specimen of Kur-reef is the most characteristic, the other ones are more or less different from the description of the typical *helicinum*.

5. *Astralium (Cyclocantha) laciniatum* Gould.

GOULD. Proc. Boston Soc. Nat. Hist. Vol. III, 1849, p. 90.
KIENER. Coq. Viv. Calcar, p. 29, Pl. 79, fig. 3, 4.
TRYON. Man. of Conch. Vol. X, p. 232, Pl. 53, fig. 32, 33.

Stat. 96. South-east side of Pearl-bank. Sulu-Archipelago. 15 M. 2 Spec.
Stat. 99. North-Ubian. 16—23 M. Lithothamnion-bottom. 1 Spec.
Stat. 174. Waru-bay, North coast of Ceram. Reef. 1 Spec.
Stat. 240. Banda. 9—45 M. Lithothamnion-bottom. 1 Spec.
Stat. 315. East of Sailus Besar, Paternoster-islands. Up to 36 M. Lithothamnion-bottom. 2 Spec.

The specimen from Stat. 174, is the only one which is adult and agrees with KIENER's fig. 3, but it is a rather bad shell, covered with incrustations and inhabited by one of the *Paguridae*. The other specimens are young and agree with GOULD's description and fig. 4 of KIENER, though they are still younger. Such juvenile specimens, always remain somewhat uncertain, unless one has large series of specimens for comparison. TRYON sees in *laciniatum* only a variety of *A. calcar* Lin.

6. *Astralinm (Cyclocantha) lapillus* Reeve. Pl. II, fig. 2.

REEVE. Conch. Ic. Vol. XIII, Trochus, fig. 65.

Stat. 240. Banda. 9—45 M. Lithothamnion-bottom. 1 Spec.
Stat. 282. Between Nusa Besi and the N.E. point of Timor. 27—54 M. Sand and Lithothamnion. 3 Spec.
Stat. 315. East of Sailus Besar, Paternoster-islands. Up to 36 M. Lithothamnion. 1 Spec.

The specimen from Stat. 315 agrees exactly with REEVE's figure and description, but it is smaller. Mr. E. A. SMITH has had the kindness to compare it with the type in the British Museum, and has approved my identification; the specimen from Banda is younger, but agrees in most respects with the other one. Of the specimens from Stat. 282, the smallest agrees with that from Banda, but is smaller, another differs only slightly from the specimen from Stat. 315, but the third, which is much larger, has long puzzled me, untill I observed that the upper whorls agree exactly in sculpture, with those of the other specimens, from the same locality, and so I am convinced, that it represents the adult state of the typical *A. lapillus*, which has a somewhat juvenile appearance. Most of the specimens are strongly covered with incrustations, which render it impossible to count the whorls. This large specimen seems to have nearly one whorl more, which gives to the shell a very different aspect, this whorl being much flatter than the upper ones, the ribs are less nodulous; the whorl is rather sharply keeled and this keel bears in the specimen before me, towards the aperture, two broad lamellae, succeeding the spines of the penultimate whorl. These lamellae are of an irregular shape, they are sculptured with spiral ribs on the upper surface, the basal surface being slightly concave, with indistinct spiral lirae and fine radiating lamellae; the margin is more or less lobed. The aperture has rose-coloured margins. The interior of the aperture is grooved at some distance from the margin; only the groove corresponding to the keel, reaches the outer margin. The operculum

in all the specimens is externally very convex, with close-set granules, the margin is deep violet, especially the columellar one.

The measurements of this adult specimen are:

Diam. maj. without lamellae 20, with lamellae 25, alt. 15 Mill.

7. *Astralium (Cyclocantha) provisorium* n. sp. Pl. II, fig. 3.

Stat. 144. North of Salomakiëe-(Damar)-island. 45 M. Lithothamnion-bottom. 1 Spec.

Shell conoidal, with a flat base, imperforate, whorls about 5, the upper three eroded and nearly covered by incrustations, but apparently rather smooth, penultimate whorl with oblique wrinkles, crossed by 3 or 4 spiral rows of square granules; towards the last whorl, irregular tubercles make their appearance, about 8 on the last whorl; these are also covered by the wrinkles and granules, below the tubercles, the last row of granules runs uninterrupted and is succeeded towards the keel by short plications, which have about the same direction as the wrinkles. Moreover the upper surface of this whorl is covered by spiral lirae, only visible under a lens. The whorls are inflated at their upper part, concave at the lower portion and are then again broader, thus covering the sutures and even part of the subsequent whorls. Keel very sharp, with short spines, about 17 in number, if seen from the base. These spines are compressed, open in front. Base flat, with 8 irregular lirae, with compressed scales; towards the keel, a few undulating spiral striae appear; this sculpture is crossed by small radiating riblets.

Aperture rhomboidal, very oblique, with sharp edges and an internal nacreous layer, at some distance from the margin, with 10 lirae near this margin, and a groove corresponding to the keel; basal margin smooth, columella emarginate, thick, thickened towards the base and forming a toothlike angle, at the junction with the basal margin. Colour of the shell yellowish-olive; the top-whorls, a zone at the base of the whorls, especially of the last one rose-coloured; the base tinted with the same colour.

Alt. 10, lat. 11; apert. alt. from upper to basal margin $6^1/_2$, lat. $4^1/_2$ Mill.

This shell has the appearance of being not adult, it resembles much the juvenile state of the preceding species, and also, but less, REEVE's figure of *Trochus hexagonus* (REEVE, *Trochus* fig. 61). It differs from both by the peculiar colour, and the beautiful row of spines or scales. Though I should prefer to wait for more materials, it is so improbable that these will be procured in a short time, that I have described this species and named it in accordance with its somewhat doubtful character.

Leptothyra Carpenter.

1. *Leptothyra* sp.

Stat. 43. Pulu Sarassa, Postillon-islands. Up to 36 M. Coral. 1 Spec.

One small, probably young specimen, which I could not identify with certainty, too incomplete for description, differs from the next species by the very numerous spiral lirae, of which one, near the shoulder is stronger, and by its prominence, forms a slight angle, the upper whorls are beaded.

2. *Leptothyra laeta* Montrouzier. Pl. IX, fig. 2.

MONTROUZIER. Journ. de Conch. 1863, p. 277, Pl. 12, fig 2 (*Turbo*).
TRYON. Man. of Conch. Vol. X, p. 258, Pl. 63, fig. 29, 30.

Stat. 7. Near reef of Batjulmati (Java). 15 M. Coral and stones. 1 Spec.
Stat. 37. Sailus Ketjil near Paternoster-islands. Shore. 9 Spec.
Stat. 53. Bay of Nangamessi, Sumba. Up to 36 M. Coralsand. 7 Spec.
Stat. 61a. North coast of Adonara. Shore. 1 Spec.
Stat. 78. Lumu-Lumu-shoal, Borneo-bank. Shore. 3 Spec.
Stat. 129. Kawio- and Kamboling-islands, Karkaralong-group. Reef. 2 Spec.
Stat. 240. Banda. Reef. 3 Spec.

There is considerable variation in the painting of this species, as stated in the original description, some specimens being nearly entirely covered by the confluent flammules; the colour varies in being in most cases reddish or brownish, but some specimens are of a bright crimson; however they agree in other respects, and it seems not to be doubtful, that they are one and the same species. MELVILL and STANDEN (Proc. Zool. Soc. 1901, p. 352) mention this species or an allied form, as being uniformly pink, but more finely striate, from lat. 18° 58′ N., long. 70° 45′ E., which shows that it is widely distributed. PILSBRY (l. c.) cites *L. supragranosus* Smith (Journ. Linn. Soc. XII, p. 558, Pl. 30, fig. 15) as a synonym; this figure is far more characteristic than the original one, displaying the beaded sculpture of the superior whorls. The radula has about the same appearance, as that of *L. Carpenteri* Pils. and *L. sangarensis* Schrenck, as figured by PILSBRY. The rhachidian tooth (R) has a narrower projection above, I could not detect a reflected cusp; the first lateral (1) has a rather large cusp, turned towards the outer side, with 3 or 4 denticles on the proximal side, the proximal uncini seem to have long, simple cusps, only the first one (U) having an elongate body, with a simple narrowly reflected margin; the distal uncini are more or less serrated on both sides.

Fam. DELPHINULIDAE.

Delphinula Lamarck.

1. *Delphinula laciniata* Lamarck.

LAMARCK. An. s. Vert. Ed. Desh. Vol. IX, p. 86.
RUMPH. Amb. Rariteitkamer, p. 73, N° 1, Pl. 20, fig. H.
KIENER. Coq. Viv. Vol. IX, Delphinula, p. 3, Pl. 1, fig. 1.
REEVE. Conch. Ic. Vol. I, Delphinula, fig. 9.
PILSBRY. Man. of Conch. Vol. X, p. 266, Pl. 67, fig. 1, 2, 4.

Stat. 89. Pulu Kaniungan Ketjil. Reef. 10 Spec.
Stat. 174. Waru-bay, N. coast of Ceram. Reef. 1 Spec.
Stat. 240. Banda. 9—45 M. Lithothamnion-bottom. 2 Spec.
Stat. 250. Kilsuin, West coast of Kur-island. 20—45 M. Lithothamnion-bottom. 1 Spec. and Reef. 1 Spec.

The specimen from Stat. 174 is somewhat intermediate between the type and var. *atrata* Chemn., by the shorter laciniate appendages and more rounded aperture; the specimens from Banda are very young.

var. *atrata* Chemnitz.

CHEMNITZ. Conch. Cab. Vol. V, p. 158, Pl. 175, fig. 1729, 1730, 1731.
REEVE. Conch. Ic. Vol. I, Delphinula, fig. 4.
PILSBRY. Man. of Conch. Vol. X, p. 267, Pl. 66, fig. 15.

Stat. 86. Dongala, Palos-bay, Celebes. Reef. 1 Spec.
Stat. 225. South Lucipara-island. Reef. 1 Spec.
Stat. 250. Kur. Reef. 1 Spec.

The last-mentioned specimen is very typical, that from Stat. 86, approaches the type by its aperture. It is indeed no easy task, to separate a large number of specimens. TROSCHEL who has described the radula of both forms, found no important differences between them, and suggests, also on this ground, that they may be merely varieties of one species.

2. *Delphinula sphaerula* Kiener. Pl. IX, fig. 3.

KIENER. Coq. Viv. Vol. IX, Delphinula, p. 5, Pl. 3, fig. 3.
REEVE. Conch. Ic. Vol. I, Delphinula, fig. 13.
PILSBRY. Man. of Conch. Vol. X, p. 268, Pl. 67, fig. 5; Pl. 68, fig. 20.

Stat. 99. North-Ubian. 16—23 M. Lithothamnion-bottom. 2 Spec.
Stat. 133. Lirung, Salibabu-island. Up to 36 M. Hard sand. 1 Spec.
Stat. 240. Banda. 9—45 M. Lithothamnion-bottom. 2 Spec.

The specimens collected by the "Siboga" are young, those from Stat. 99 even very young; in consequence the characteristic appendages are not very conspicuous. The operculum does not differ materially from that of *D. laciniata* Lam. In the largest specimen, with a diameter of 22 Mill. (without the appendages) it is more delicate, being smoother, of a lighter colour, the concentric whorls a trifle narrower, than in a specimen of *D. laciniata* from Amboina, of the same diameter, which I could compare with the specimen under consideration. The operculum of a still smaller specimen from Banda, shows under the microscope about 16 whorls, of which those near the nucleus are very narrow. The radula has about the same aspect, as that of *D. laciniata*, figured by TROSCHEL (Gebiss der Schnecken, Vol. II, pl. 21, fig. 8); the cusp of the rhachidian tooth is simple, while in a radula of *D. laciniata* from Amboina, each side of the cusp seems to have a small, very pellucid denticle, which has not been mentioned by TROSCHEL, perhaps on account of its thin structure; the body is higher in proportion to its breadth, if compared with *D. laciniata* or *atrata*; the fourth and fifth laterals (4, 5) are considerably larger, than either in *D. laciniata*, or in its variety *atrata*, as figured by TROSCHEL, the length of the cusps surpassing much the diameter of the rhachidian tooth; they have on their base a secondary denticle, which is more distinct, than in my specimen of *D. laciniata*. Moreover the primary cusps in *D. laciniata* are directed nearly horizontally, in *sphaerula* more oblique.

Liotia Gray.

1. *Liotia varicosa* Reeve.

REEVE. Proc. Zool. Soc. Lond. 1843, p. 142 (*Delphinula*).
—— Conch. Ic. Vol. I, Delphinula, Sp. 12.

Stat. 64. Kambaragi-bay, Tanah Djampeah. Up to 32 M. Coralsand. 1 Spec.
Stat. 71. Makassar. 27—32 M. Sand with mud. 3 Spec.
Stat. 109. Pulu Tongkil, Sulu-Archipelago. 13 M. Lithothamnion-bottom. 1 Spec.
Stat. 133. Lirung, Salibabu-island. Up to 36 M. Hard sand. 1 Spec.
Stat. 240. Banda. 9—45 M. Lithothamnion-bottom. 13 Spec.
Stat. 301. Pepela-bay, East coast of Rotti. 22 M. Lithothamnion-bottom. 1 Spec.
Stat. 313. East of Dangar-Besar, Saleh-bay. Up to 36 M. Sand and mud. 19 Spec.

According to the long list of Stations, this species is widely distributed in the Archipelago. The specimens vary in size and in sculpture, some specimens being more angular at the shoulder; the puncturing, as observed by REEVE, is more or less obvious.

2. *Liotia Peronii* Kiener.

KIENER. Coq. Viv. Vol. IX, Delphinula, p. 9, Pl. III, fig. 5.
REEVE. Conch. Ic. Vol. I, Delphinula, fig. 10.

Stat. 125. Sawan, Siau-island. Reef. 2 Spec.
Stat. 250. Kur. Reef. 1 Spec.

The specimens vary still more in size, than those of the preceding species, that from Kur is $19^1/_2$ Mill. and apparently not yet adult. That from Stat. 125 measures scarcely 9 Mill. in its largest diameter. The latter specimen agrees with KIENER's figure, those from Kur with that of REEVE.

3. *Liotia sp.*

Stat. 37. Sailus Ketjil, Paternoster-islands. Up to 27 M. Coralsand. 1 Spec.
Stat. 66. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8 M. 1 Spec.
Stat. 96. South east side of Pearl-bank, Sulu-archipelago. 15 M. Lithothamnion-bottom. 2 Spec.
Stat. 240. Banda. 9—45 M. Lithothamnion-bottom. 1 Spec.

The specimens are very young; they seem to be allied to the preceding species, but differ a. o. by their more raised embryonic whorls, in which character they agree with two specimens of a *Liotia*, received from the Samoa-islands as *L. Hermanni* Dkr. TRYON (Man. of Conch. Vol. X) considers this species as a synonym of *L. Peronii* Kien.. I can only say that the "Siboga" specimens don't agree in their upper whorls with those of *L. Peronii* from the same collection

4. *Liotia (Arene) radiata* Kiener?

KIENER. Coq. Viv. Vol. IX, Delphinula, p. 7, Pl. 4, fig. 9.
REEVE. Conch. Ic. Vol. I, Delphinula, fig. 24.

Stat. 59. Western entrance Samau-Strait. 309 M. Coarse coralsand. 1 Spec.
Stat. 95. 5°43'.5 N., 119°40' E. 522 M. Stony bottom. 1 Spec.

It is only with much doubt, that I have identified the young specimens with KIENER's species, which according to E. A. SMITH, is identical with *L. muricata* Reeve, (l. c. fig. 18). REEVE gives as locality for both East Indies and Indian seas, though HUMPHREYS had in his collection *L. radiata* from the West Indies. TRYON who keeps the two species separated, mentions

"West Indies" for *L. radiata* and "Australia" and "Philippines" for *L. muricata*. I possess a specimen better agreeing with *L. muricata*, than with *L. radiata*, from Curaçao. The "Siboga" specimen from Stat. 59, agrees in the spines of the keel and in the red spots, but the upper surface has more beaded spirals, and the base is sculptured by waved, radiating striae instead of beads. However this may depend on age or variability; it seems very unsafe to make conclusions on one small and not quite intact specimen. The other one is very young.

5. *Liotia (Arene) crenata* Kiener.

KIENER. Coq. Viv. Vol. IX, Delphinula, p. 11, Pl. 4, fig. 8.
REEVE. Conch. Ic. Vol. I, Delphinula, fig. 19.

Stat. 37. Sailus Ketjil, Paternoster-islands. Shore. 1 Spec.

Though the only specimen is very young, I don't hesitate about its identification; the characteristic sculpture, perfectly agrees with that of the upper whorls, of an adult specimen, received from New Caledonia.

6. *Liotia sp.*

Stat. 81. Pulu Sebangkatan, Borneo-bank. 34 M. Lithothamnion-bottom. 1 Spec.

A small specimen, probably new, but not in sufficiently good condition for description.

7. *Liotia (Arene) sp.*

Stat. 81. Pulu Sebangkatan, Borneo-bank. 34 M. Lithothamnion-bottom. 1 Spec.

Allied to *L. crenata* Kien., but differing in several particulars, especially in the much narrower umbilicus. It is perhaps new, but the shell is too much worn, for giving a sufficient description of the sculpture.

8. *Liotia (Arene) armata* Adams var. Pl. III, fig. 1.

ADAMS. Ann. and Mag. of Nat. Hist. 3d Series, Vol. VIII, 1861, p. 243.

Stat. 95. 5°43'.5 N., 119°40' E. 522 M. Stony bottom. 1 Spec.

This species has been described by ADAMS, from Korea-strait, from a depth of only 46 fathoms. The specimen under consideration is dead, as it is however in good condition, it has been figured. According to E. A. SMITH, who has compared it with the collection of the British Museum, the spire is flatter at the top than in the type.

9. *Liotia (Arene) lamellosa* n. sp. Pl. III, fig. 2.

Stat. 95. 5°43'.5 N., 119°40' E. 522 M. Stony bottom. 1 Spec.

Shell depressedly turbinate, yellowish-white, whorls $4^1/_2$, upper ones forming a slightly concave spire, nucleus rather smooth, followed by a whorl, with regular, distinct ribs, slightly angular at some distance from the suture, from there towards the aperture the suture is excavated

and the shell bears strong ribs, becoming more distant as they approach the aperture, and being obsolete on the last half whorl; these ribs have blunt spines, bordering the margin of the subsutural excavation, and sharper ones at the periphery, which is keeled in the interstices of the ribs. Last whorl with another keel at some distance from the periphery, with rather obsolete indications of spines, corresponding to those of the upper keel, the space between the keels and above the periphery somewhat concave. Umbilicus pervious, its margin strongly crenulated or folded, the folds entering the umbilicus and partly running upwards, towards the lower keel. Aperture circular, its inner lip protracted, outer lip very broad and thick, broadest at its upper part, slightly excavated and reflected externally. The whole exterior of the shell covered by low, crowded lamellae.

Alt. 4, diam. maj. $7^1/_2$, apert. alt. et lat. $2^2/_5$ Mill.

Allied to *L. siderea* Reeve, but more depressed if seen on the apertural side, the shape differs by the more prominent peripheral keel, the outer lip is broader etc.

Fam. Cyclostrematidae.

Cyclostrema Marryat.

1. *Cyclostrema reeveana* Hinds.

Hinds. Voy. of the Sulphur, p. 52, Pl. 16, fig. 17.
Reeve. Conch. Ic. Vol. I, Delphinula, fig. 17.
—— Conch. Ic. Vol. XIX, Cyclostrema, fig. 13.
Adams. Proc. Zool. Soc. Lond. 1850, p. 42.

Stat. 47. Bay of Bima, near south fort. 13—54 M. Mud with coralsand. 1 Spec.

The only specimen though adult, is smaller than one from Cebu, having only a diameter of 9 Mill., the sculpture however is the same; the body whorl has on its upper half three principal keels, of which the uppermost forms an angle; on the flat space between this angle and the suture, run three secondary keels or lirae; the lirae of the base, five in number, are placed closer, the last one borders the umbilicus, or is partly placed into it. A short keel and two fainter ones run in the umbilicus, these last rendering the external border of the columellar margin crenulate. The radiating ribs, about fourty in number on the last whorl, form small cusps, where they cross the lirae. Moreover the shell has in the interstices very fine growth-striae, which become lamellose near the suture. The umbilicus has a lamellose appearance, by the continuation of the ribs.

Both Reeve and Adams cite Proc. Zool. Soc. Lond. 1843 for this species, but I cannot find the description there.

Teinostoma Adams.

1. *Teinostoma sibogae* n. sp. Pl. II, fig. 5.

Stat. 105. 6° 8′ N., 121° 19′ E. 275 M. Coralbottom. 1 Spec.

Shell depressedly globose, imperforate, surface smooth, with scarcely visible lines of

growth and an impressed line below the suture. Colour yellowish-white, whorls about $3^1/_2$, slightly convex, with a conspicuous suture. Aperture circular, peristome rather thick, separated by a groove, from a subtriangular lobe at the upper part of the aperture, and from a tongue-shaped callus covering the umbilical region; around this callus, another larger, semicircular one is separated by a groove, from the slightly depressed basal surface, this latter callus is grooved by a few radiating striae.

Alt. $2^2/_5$, diam. maj. 3, diam. of apert. $1^1/_4$ Mill.

2. *Teinostoma* sp.

Stat. 297. 10° 39′ S., 123° 40′ E. 520 M. Soft, grey mud. 5 Spec.

The largest of the specimens has a diameter of 3 Mill.; they are probably young and could not be identified.

Fam. Trochidae.

Trochus Linné.

1. *Trochus (s. str.) niloticus* Linné.

Linné. Syst. Nat. Ed. XII, p. 1227.
Rumph. Amb. Rariteitkamer, p. 74, Pl. 21, fig. A.
Kiener. Coq. Viv. Vol. X, Trochus, p. 66, Pl. 10.
Pilsbry. Man. of Conch. Vol. XI, p. 17, Pl. 1, fig. 5—8.

Stat. 53. Bay of Nangamessi, Sumba. Up to 36 M. Coralsand. 1 Spec.
Stat. 78. Lumu-Lumu-shoal, Borneo-bank. Shore. 2 Spec.
Stat. 129. Kawio and Kamboling-islands, Karakalong-group. Reef. 1 Spec.
Stat. 225. Lucipara-island. Reef. 1 Spec.
Stat. 313. Dangar Besar, Saleh-bay. Up to 36 M. Sand. 1 Spec.
*Amboina. 1 Spec.

The specimens from Stat. 78 contain Paguridae, that from Stat. 313 is the only adult one, with expanded last whorl.

2. *Trochus (s. str.) fenestratus* Gmelin.

Gmelin. Syst. Nat. Ed. XIII, p. 5582.
Rumph. Amb. Rariteitkamer, p. 75, Pl. 21, fig. 8.
Reeve. Conch. Ic. Vol. XIII, Trochus, fig. 16, 17, 18 (*exaltatus*, *crenulatus*, *fenestratus*).
Kiener. Coq. Viv. Vol. X, Trochus, p. 117, Pl. 38, fig. 3.
Pilsbry. Man. of Conch. Vol. XI, p. 22, Pl. 4, fig. 28, 29.

Stat. 16. Bay of Kankamaraän, South coast of Kangeang. Shore. 2 Spec.
Stat. 81. Pulu Sebangkatan, Borneo-bank. 34 M. Coral and Lithothamnion. 1 Spec.
Stat. 93. Pulu Sanguisiapo, Tawi-Tawi-islands, Sulu-archipelago. 12 M. Lithothamnion. 1 Spec.
Stat. 142. Laiwui, coast of Obi-Major. Reef. 1 Spec.
Stat. 193. Sanana-bay, East coast of Sula Besi. Reef. 2 Spec.
Stat. 225. Lucipara-island. Reef. 1 Spec.
Stat. 240. Banda. 9—45 M. Lithothamnion. 1 Spec.
*Amboina. 1 Spec.

3. *Trochus (Lamprostoma) maculatus* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 756, N⁰ 502.
RUMPH. Amb. Rariteitkamer, p. 74, fig. C?, 5.
KIENER. Coq. Viv. Vol. X, Trochus, p. 101, Pl. 29, fig. 1, 1*a*.
REEVE. Conch. Ic. Vol. XIII, Trochus, fig. 4 and 66 (*smaragdus*).
PILSBRY. Man. of Conch. Vol. XI, p. 24, Pl. 9, fig. 94, 100, 1, 2, 3.

Stat. 33. Bay of Pidjot, Lombok. 22 M. Coralsand. 1 Spec.
Stat. 131. Beo, Karakelang-islands. Reef. 1 Spec.
Stat. 193. Sanana-bay. East coast of Sula Besi. Reef. 2 Spec.
Stat. 231. Amboina. Reef. 2 Spec.
Stat. 250. Kilsuin, West coast of Kur-island. 20—45 M. Coral and Lithothamnion. 1 Spec.
Stat. 313. East of Dangar Besar, Saleh-bay. Up to 36 M. Sand. 1 Spec.

The specimen from Stat. 131, is the only quite typical one, with nearly straight outlines and a sharp keel; the other specimens show some affinity to the next variety and to *T. verrucosus* Gmel., which, according to PILSBRY belongs to this species. Indeed it is very difficult, if not impossible, to classify every specimen of a rather large series, if one admits many species.

var. *granosus* Lamarck.

LAMARCK. An. s. vert. Ed. Desh. Vol. 9, p. 137.
KIENER. Coq. Viv. Vol. X, Trochus, p. 103, Pl. 34, fig. 1.
REEVE. Conch. Ic. Vol. XIII, Trochus, fig. 67 (*gibberulus*).
PILSBRY. Man. of Conch. Vol. XI, p. 26, Pl. 6, fig. 51, 60, Pl. 9, fig. 4.

Stat. 131. Beo, Karakelang-islands. Reef. 1 Spec.
Stat. 225. Lucipara-islands. Reef. 11 Spec.
*Amboina. 2 Spec.

The specimen from Stat. 131 seems to belong to the form called *gibberulus* by ADAMS, it is higher, the altitude being 43 Mill., with a diameter of 37 Mill. Even those from Stat. 225, are higher in proportion to their diameter, like the figure of KIENER, copied by PILSBRY; in only one specimen, not quite adult, the altitude is surpassed by the diameter.

4. *Trochus (Lamprostoma) incrassatus* Lamarck.

LAMARCK. An. s. vert. Ed. Desh. Vol. 9, p. 138.
REEVE. Conch. Ic. Vol. XIII, Trochus, fig. 77?
KIENER. Coq. Viv. Vol. X, Trochus, p. 113, Pl. 37, fig. 1,
PILSBRY. Man. of Conch. Vol. XI, p. 26, Pl. 6, fig. 48, 49 (50?).

Stat. 40. Pulu Kawassang, Paternoster-islands. Reef. 1 Spec.
*Amboina. 1 Spec.
*Java. 3 Spec.

The specimens agree very well with the figures and description of FISCHER in KIENER's Coq. Viv., copied by PILSBRY; much less with REEVE's figure 77 (PILSBRY, fig. 50) the outlines of the spire in these figures, not being convex. Perhaps these figures represent another allied species.

5. *Trochus (Lamprostoma) creniferus* Kiener.

KIENER. Coq. Viv. Vol. X, Trochus, p. 109, Pl. 34, fig. 3.
PILSBRY. Man. of Conch. Vol. XI, p. 27, Pl. 7, fig. 67, 68.

Stat. 66. Bank between islands of Bahuluwang and Tambolungan. 8—10 M. 1 Spec.
Stat. 142. Laiwui, coast of Obi-Major. 23 M. Mud. 1 Spec.

The specimen from Stat. 66 is very young and accordingly of somewhat doubtful identification, that from Stat. 142, though not adult, is easily recognizable. PILSBRY considers this species to be a variety of the preceding species, but as the sculpture in the two specimens I could compare, is rather different, I have kept them separated. The sculpture of the base in this species, consists of beaded spiral lirae, with comparatively broad interstices, about twice as broad as the granules, with radiating and faint spiral sculpture, while in *incrassatus*, the granules are much larger and either nearly touch the neighbouring row, or the lirae are separated by interstices, which are considerably narrower than the lirae.

6. *Trochus (Lamprostoma) sp.*

Stat. 109. Pulu Tongkil, Sulu-Archipelago. 13 M. Lithothamnion-bottom. 1 Spec.

This specimen is too small for identification. I think it does not belong to one of the preceding species.

7. *Trochus (Lamprostoma) tubiferus* Kiener.

KIENER. Coq. Viv. Vol. X, Trochus, p. 116, Pl. 37, fig. 3.
REEVE. Conch. Ic. Vol. XIII, Trochus, fig. 15 (*concinnus*).
PILSBRY. Man. of Conch. Vol. XI, p. 31, Pl. 6, fig. 62, 63.

Stat. 250. Island Kur. Reef. 1 Spec.

The only specimen agrees better with REEVE's figure of *T. concinnus*, than with the typical one of KIENER, copied by PILSBRY; as however according to FISCHER, KIENER's specimen was not adult and the species is very variable, I have applied KIENER's older name.

Clanculus Montfort.

1. *Clanculus unedo* Adams.

ADAMS. Proc. Zool. Soc. Lond. 1851, p. 161.
KIENER. Coq. Viv. Vol. X, Trochus, p. 323, Pl. 101, fig. 2.
PILSBRY. Man. of Conch. Vol. XI, p. 70, Pl. 10, fig. 17, 18.

Stat. 66. Bank between islands of Bahuluwang and Tambolungan. 8—10 M. 1 Spec.
Stat. 301. Pepela-bay, East coast of Rotti-island. 22 M. Lithothamnion-bottom. 1 Spec.

Both specimens though young and broken, are recognizable by the characteristic contour and sculpture.

2. *Clanculus atropurpureus* Gould.

GOULD. Proc. Bost. Soc. Nat. Hist. Vol. III, p. 107.
KIENER. Coq. Viv. Vol. X, Trochus, p. 239, Pl. 82, fig. 2 (*samoensis*).
PILSBRY. Man. of Conch. Vol. XI, p. 77, Pl. 15, fig. 50, 51; Pl. 11, fig. 28—32; Pl. 13, fig. 86, 87.

Stat. 60. Haingsisi, Island Samau. Reef. 1 Spec.

The only specimen is very dark in the interstices of the lirae, which are yellowish-brown. HEDLEY (Proc. Linn. Soc. N. S. Wales, 1902, p. 16) suggests, that *C. atropurpureus* Gld. and *C. samoensis* Hombr. & Jacq., should be the same as *C. denticulatus* Gray. As he says however "appear to be synonyms", I have left GOULD's name to the species in question. It seems to be rather variable in colour.

Monodonta Lamarck.

1. *Monodonta (s. str.) labio* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 759.
RUMPH. Amb. Rariteitkamer, p. 75, Pl. 21, fig. E.
KIENER. Coq. Viv. Vol. X, Trochus, p. 223, Pl. 73, fig. 1, Pl. 74, fig. 4.
PILSBRY. Man. of Conch. Vol. XI, p. 86, Pl. 19, fig. 95, 96.

Stat. 19. Bay of Labuan Tring, West coast of Lombok. 18—27 M. Coralsand. 3 Spec.
Stat. 47. Bay of Bima, near south fort. Shore. 1 Spec.
Stat. 50. Bay of Badjo, West coast of Flores. Up to 40 M. Sand. 4 Spec.
Stat. 51. Madura-bay. Shore. 1 Spec.
Stat. 64. Kambaragi-bay, Tanah-Djampeah. Up to 32 M. Coralsand. 3 Spec.
Stat. 86. Dongala, Palos-bay, Celebes. Shore. 1 Spec.
Stat. 98. 6° 9′ N., 120° 21′ E. 350 M. Sand. 1 Spec.
Stat. 131. Beo, Karakelang-islands. Reef. 2 Spec.
Stat. 277. Kulewatti-bay, Dammer-island. 45 M. Sand. 2 Spec.

The specimens vary much in colour and coarseness of sculpture. The great depth on which the specimen from Stat. 98 has been dredged, may be due to its being an empty shell, which will have sunken to the bottom.

2. *Monodonta (s. str.) canalifera* Lamarck.

LAMARCK. An. s. vert. Ed. Desh. Vol. 9, p. 177.
KIENER. Coq. Viv. Vol. X, Trochus, p. 225, Pl. 73, fig. 2, 3.
PILSBRY. Man. of Conch. Vol. XI, p. 88, Pl. 62, fig. 87.

Stat. 51. Madura-bay. Shore. 4 Spec.
Stat. 64. Kambaragi-bay, Tanah-Djampeah. Up to 32 M. Coralsand. 1 Spec.
Stat. 165. N. E. side of Daram-island, East coast of Misool. 49 M. 5 Spec.
Stat. 277. Kulewatti-bay, Dammer-island. 45 M. Sand. 1 Spec.

The specimen from Stat. 64 is the largest, being considerably larger than the measurements given by FISCHER and PILSBRY (Alt. 24, diam. 20 Mill.) and surpassing even those of LAMARCK's shell (diam. 11 lignes), the Siboga-specimen measuring: Alt. 31, diam. $29^1/_2$ Mill. Its sculpture and painting is also coarser than in the specimens from the other Stations.

Chrysostoma Swainson.

1. *Chrysostoma paradoxum* Born.

BORN. Test. Mus. Caes. Vindob. p. 349, Pl. 13, fig. 16, 17.
REEVE. Conch. Ic. Vol. XIII, Turbo, fig. 48 (*nicobaricus*).
KIENER. Coq. Viv. Vol. X, Turbo, p. 68, Pl. 36, fig. 5 (*nicobaricus*).
PILSBRY. Man. of Conch. Vol. XI, p. 466, Vol. X, Pl. 45, fig. 91, 92.

Stat. 66. Bank between islands of Bahuluwang and Tambolungan. 8 M. 1 Spec.
Stat. 81. Pulu Sebangkatan, Borneo-bank. Reef. 1 Spec.
Stat. 240. Banda. 9—45 M. Lithothamnion-bottom. 2 Spec.
Stat. 258. Tual-anchorage, Key-islands. 22 M. Lithothamnion-bottom. 1 Spec.
Stat. 315. East of Sailus Besar, Paternoster-islands. Lithothamnion-bottom. 1 Spec.
*Java. 2 Spec.

TROSCHEL (Das Gebiss der Schnecken, II, p. 221, Pl. 21, fig. 7) has described and figured with some doubt, the radula of this species, of which he had received the soft parts without the shell, from G. NEVILL, and though he has recognized, that its place is not in the group *Umboniinae*, he still left it in that company. He says that the radula more resembles that of *Gibbula*. PILSBRY (l. c.) says: "the radula has teeth considerably like *Monodonta* and *Diloma*, but still locates the genus in the *Umboniinae*. The radula of a specimen from Banda, examined by me, agrees with TROSCHEL's figure and description, and thus no doubt about the correctness being left, I think the genus may be removed from that group. As PILSBRY (l. c. p. 6) places the species without a jaw in the subfamily *Trochininae*, those with a jaw in the *Gibbulinae*, and neither TROSCHEL nor I have observed a jaw, it should be provisionally located in the subfamily *Trochininae*.

Cantharidus Montfort.

1. *Cantharidus Giliberti* Montrouzier. Pl. IX, fig. 4.

MONTROUZIER. Journ. de Conch. 1878, p. 207, 1879, p. 33, Pl. III, fig. 7 (*Trochus*).
KIENER. Coq. Viv. Vol. X, Trochus, p. 401, Pl. 119, fig. 2.
PILSBRY. Man. of Conch. Vol. XI, p. 128, Pl. 45, fig. 37, 38.

Stat. 37. Sailus Ketjil, Paternoster-islands. Up to 18 M. Coralsand. 3 Spec.
Stat. 43. Pulu Sarassa, Postillon-islands. Up to 36 M. Coral. 2 Spec.
Stat. 66. Bank between Bahuluwang and Tambolungan. 8—10 M. 4 Spec.
Stat. 90. 1° 17'.5 N., 118° 53' E. 281 M. Coral and sand. 1 Spec.
Stat. 109. Sulu-Archipelago. 13 M. Lithothamnion-bottom. 2 Spec.
Stat. 315. Sailus Besar, Paternoster-islands. Up to 36 M. Lithothamnion-bottom. 1 Spec.

Though the specimens from the mentioned localities, differ in some respects from the description, I think this may depend upon their juvenile state, the largest specimen having only an altitude of 9 Mill. instead of 13, and 9 whorls instead of 12, with 11 lirae against 15—16 in the original description, 15—18 in Journ. Conch. 1879. As however the specimens vary in this respect, and the other characters agree, I think it unnecessary to give them even a new varietal name. The colour is slightly variable, being more or less painted with white. The top-whorls are in a few specimens painted with coral-red.

The operculum is very thin, light yellow, with about 12 whorls, which under the microscope show fine radiating and spiral striae, which by their intercrossing, give a somewhat beaded appearance to the outer surface.

The animal has a brown mufle, the tentacles are moderately long, whitish, articulated with brown, the eyes black, with white rings. I see two cirri on each side of the epipodial line, but their number may have been larger, as the end of the foot has been lost.

The rhachidian tooth (R) has an elongated triangular body, with a small tricuspid cusp; the first (1), second (2) and third (3) laterals, have also elongated bodies and a cusp with a larger denticle, and smaller ones at the proximal and distal sides, one or two on the proximal side, depending perhaps on the position of the tooth, and invariably two on the distal side; the fourth (4) and fifth (5) have one denticle on the proximal side; the fourth two, the fifth three denticles on the distal side, their bodies are quadrangular. Of the numerous uncini the outer ones have two denticles, the other seem to have but one; these become smaller towards the margin of the radula, those of the median part, on the contrary, become larger from the centre towards the uncini. Number of rows about 33.

2. *Cantharidus articularis* Adams.

A. Adams. Proc. Zool. Soc. Lond. 1851, p. 170.
Pilsbry. Man. of Conch. Vol. XI, p. 150.

Stat. 109. Pulu Tongkil, Sulu-Archipelago. 23 M. Lithothamnion-bottom. 1 Spec.

Unfortunately the only specimen is a small, dead shell, not fit for figuring, the peripheral lirae of each whorl are slightly prominent and striated, the base has about seven lirae besides a few intermediate ones.

3. *Cantharidus (Thalotia) elongatus* Wood.

Wood. Ind. Test. Suppl. Pl. 5, fig. 19.
Kiener. Coq. Viv. Trochus, p. 281, Pl. 92, fig. 1.
Pilsbry. Man. of Conch. Vol. XI, p. 143, Pl. 45, fig. 56.

Stat. 81. Pulu Sebangkatan, Borneo-bank. 34 M. Lithothamnion-bottom. 1 Spec.
Stat. 240. Banda. 9—45 M. Lithothamnion-bottom. 2 Spec.
Stat. 282. Between Nusa Besi and N.E. point of Timor. 27—54 M. Lithothamnion-bottom. 2 Spec.
Stat. 315. East of Sailus Besar, Paternoster-islands. Up to 36 M. Lithothamnion-bottom. 1 Spec.

Only the specimen from Stat. 81 is adult, the largest of the remaining 5 specimens having only a length of 13 Mill.

4. *Cantharidus (Thalotia) polychroma* Adams.

A. Adams. Proc. Zool. Soc. Lond. 1851, p. 168 (*Zizyphinus*).
Reeve. Conch. Ic. Vol. XIV, Zizyphinus, fig. 40.
Pilsbry. Man. of Conch. Vol. XI, (Calliostoma), p. 356, Pl. 17, fig. 31.

Stat. 215. 1300 M. from N. point of Kabia-island. Reef. 1 Spec.

As the columella of this species is slightly thickened in the middle, I have located it in *Cantharidus*. I see eleven striae on the last whorl, the uppermost and lower two, border slightly prominent lirae. Base with about 10 lirae, convex.

5. *Cantharidus (Thalotia) maldivensis* Smith.

SMITH. The Fauna and Geography of the Maldive and Laccadive Archip. Vol. II, part 2. Marine Mollusca, p. 617, Pl. 35, fig. 25, 26.

Stat. 37. Sailus Ketjil, Paternoster-islands. 18 and 17 M. Coralsand. 5 Spec.
Stat. 99. North-Ubian. 16—23 M. Lithothamnion-bottom. 1 Spec.
Stat. 109. Pulu Tongkil, Sulu-Archipelago. 13 M. Lithothamnion-bottom. 5 Spec.
Stat. 133. Lirung; Salibabu-island. 36 M. Hard sand. 1 Spec.
Stat. 240. Banda. 9—45 M. Lithothamnion-bottom. 3 Spec.

E. A. SMITH has described (l. c.) two colour-varieties. The specimens of the Siboga Expedition show a larger range of variability. Some specimens are nearly typical, others are typical in painting, but with white flames on a purple ground, or of a uniform green, shaded with yellow, with or without the spotted band at the base of each whorl. In most specimens the colour is mixed with yellow granules, and sometimes also with nearly black ones. The largest specimen, from Stat. 99 has a length of $12^1/_2$ Mill. and slightly coarser sculpture. Besides the sculpture described by SMITH, I observed still another system of sculpture, visible only under the lens; between the rows of granules, are a few fine, spiral, elevated striae, 1 to 3 in each interstice of the last whorl, crossed by oblique, slightly lamellose striae. On the base of the shell I observed also one distinct, and often 1 or 2 very small intermediate lirae, and also less crowded oblique striae.

6. *Cantharidus (Thalotia) pliciferus* n. sp. Pl. III, fig. 3.

Stat. 109. Pulu Tongkil, Sulu-Archipelago. 13 M. Lithothamnion-bottom. 1 Spec.

Shell conical, with a rather elevated spire and convex base, angular at the periphery, imperforate. Whorls 6, slightly convex, upper 3 whorls white, the fourth rosy, turning to crimson on the fifth; last whorl whitish, rather regularly ornamented by brown blotches in 5 spiral rows, angle or keel articulated with white and black, base with 6 rows of blackish-brown blotches. Embryonic whorls wanting at least for a large part; first persisting whorl, smooth at first, then with 4 spiral lirae, with narrow interstices, which are punctured; on the fourth whorl radiating ribs make their appearance, running from suture to suture, and making the upper edge of this and the subsequent whorls crenulated near the suture, which is very deep and waved at the base of each whorl, by the bluntly ending ribs. On the last whorl, the ribs are nearly white, especially towards the periphery, this whorl and the penultimate one have 5 spiral lirae exclusive of the peripheral keel. Base with 6 spirals of which that near the columella is uniformly white, like the ground-colour of the base, the other ones have the blackish spots; their interstices are broad, with slightly scaly striae; moreover the whole shell in covered with very fine growth-striae, visible only under a strong lens. Aperture subquadrate, outer and basal margins thin,

curved; columella rather straight, truncated at the base and with a toothlike tubercle about halfway its length, it forms a distinct angle at its junction with the basal margin.

Alt. 10, diam. maj. 9; apert. alt. $4^3/_4$, lat. $4^1/_2$ Mill.

Though the only specimen has a somewhat juvenile appearance, it is so much different from the described species known to me, that I thought it desirable to describe it; the most salient characters are: the diversity of colours, being white-, crimson- and black-blotched on the same shell, and the ribs which are especially conspicuous towards the keel.

Monilea Swainson.

1. *Monilea calyculus* Wood. Pl. IX, fig. 5.

WOOD. Ind. Test. Suppl. Pl. 6, fig. 44.
NEVILL. Journ. Asiatic Soc. Bengal, 1874, p. 28, Pl. 1, fig. 1 (*Masoni*).
SMITH. Proc. Zool. Soc. Lond. 1878, p. 818.
PILSBRY. Man. of Conch. Vol. XI, p. 247 and 470, Pl. 41, fig. 14, 15.

Stat. 37. Sailus Ketjil, Paternoster-islands. Up to 18 M. Coralsand. 1 Spec.
Stat. 133. Lirung, Salibabu-island. 36 M. Hard sand. 2 Spec.
Stat. 240. Banda. 9—36 M. Lithothamnion-bottom. 4 Spec.
Stat. 313. East of Dangar Besar, Saleh-bay. Up to 36 M. Sand. 6 Spec.

Some controversy has existed about the specific value of this form; many authors unite it with *M. callifera* Lam. So PILSBRY (l. c.) declared it a synonym on page 247, and as doubtless distinct on page 470. I think, after comparing several specimens of both forms, that PILSBRY is right in his last opinion. Both species though very variable in colour and painting, seem to be considerably different in shape and sculpture.

Operculum thin, light brown, with few (about 6) whorls, very concave exteriorly, shining and very convex on the inner side.

The radula has a very delicate appearance, the three median teeth being very pellucid. The rhachidian tooth (R) has a broad, triangular body, with convex sides, the cusps of this and of the first laterals are very inconspicuous, and have more the appearance of a thickening of the margin, than of a real cusp; the body of the first lateral (1) resembles one half of the rhachidian tooth, that of the second lateral (2) is slightly more oblong; the third (3), fourth (4) and fifth (5) are quite oblong, this last has at its distal upper corner a small auricle. The uncini (U) have conspicuous cusps on long bodies, and a small denticle at their distal margin, their shape however is not easy to be made out, on account of their standing so crowded; their number is more than 100 on each side.

2. *Monilea celebensis* n. sp. Pl. II, fig. 10.

Stat. 71. Makassar and surroundings. 27—32 M. 1 Spec.

Shell small, depressed-conoidal, with about 6 angular whorls; nucleus smooth, followed by 2 whorls, each with 2 spiral lirae, of which the uppermost, standing about midway the whorl, is more prominent and renders the whorls angular, these whorls being flattened towards the suture,

on the second post-nuclear whorl, a third spiral appears near the suture, on the penultimate whorl the number of lirae is four, of which 2 strong ones on the basal, 2 smaller ones on the upper half; last whorl with 9 lirae on the upper surface and about 10 on the base, often but not regularly, they are alternately stronger and weaker. The whole shell is crossed by conspicuous growth-lines, rendering the lirae more or less beaded. The colour is yellowish-white, with interrupted, blackish-brown flammules and a lighter zone above the periphery; the base is nearly covered by the darker colour. Umbilicus moderately wide, radiately striated interiorly, with a conspicuous funicle and a very slight second one near the margin, which is bordered by the last of the lirae, which is strong and conspicuously beaded. Aperture almost rhombic, outer and basal margin thin, thickened in the interior, the outer one internally with 5 strong lirae, the basal with 4 slightly elongated teeth, columellar margin excavated, upper end appressed to the body-whorl, its margin slightly reflected, its basal end with two small denticles, corresponding to the grooves under the umbilical funicles.

Diam. maj. $5^3/_4$, alt. $4^1/_2$; apert. alt. 2, lat. $2^1/_2$, diam. of umbilicus $1^1/_4$ Mill.

I should have hesitated to describe this species as new, were it not that Mr. E. A. Smith has compared it with the collection of the British Museum, where many of the types of the numerous unfigured species of Adams and Gould are preserved. It is remarkable by its angular whorls; it calls in mind many species of the genus *Minolia*, but the conspicuous funicle has induced me to describe it as a *Monilea*.

3. *Monilea (Rossiteria) nuclea* Philippi.

Philippi. Zeitschr. f. Malak. 1849, p. 171 (*Trochus*).
—— Mart.-Chemn. Conch. Cab. Ed. II, Trochus, p. 306, Pl. 44, fig. 9.
Kiener. Coq. Viv. Vol. X, Trochus, p. 256, Pl. 86, fig. 2.
Pilsbry. Man. of Conch. Vol. XI, p. 257, Pl. 61, fig. 31, 32.

Stat. 240. Banda. 9—36 M. Lithothamnion-bottom. 6 Spec.
Stat. 248. Ruma Lusi, North point of Tiur-island. 36 M. 1 Spec.

As stated in the descriptions, this species is very variable in colour, and in the Siboga specimens also in coarseness of sculpture. A peculiarity not mentioned in the descriptions at my disposal, is that the outer margin of the shell has a conspicuous sinus below the periphery; as however the margin is often broken, this may account for the fact, that most observers have overlooked this peculiarity, which is often more clearly seen in former striae of growth.

Priotrochus Fischer.

1. *Priotrochus* (?) *incertus* n. sp. Pl. II, fig. 4.

Stat. 59. Western entrance, Samau-strait. 390 M. Coarse coralsand. 1 Spec.

Shell conical, with convex base, imperforate, yellowish-white. Whorls 6, convex, separated by a deep suture, which is waved by the ends of the ribs. Nucleus smooth, the other whorls with strong ribs, of which there are 12 on the last whorl, they are crossed on the lower whorls by 2 spiral cords, producing tubercles on the ribs, these ribs extend on the base till the first

infraperipheral cord. Base convex, with 5 spiral lirae; the whole shell is covered with microscopic, oblong punctures. Aperture nearly circular, the outer and basal margin regularly curved, thin, slightly thickened interiorly. Columella nearly straight, with an inconspicuous tubercle about halfway, near the base with a rounded angle. Inside of aperture nacreous.

Alt. $4^{1}/_{2}$, diam. maj. $3^{3}/_{4}$; apert. alt. 2, lat. $1^{3}/_{4}$ Mill.

It is with much doubt, and chiefly on the authority of Mr. E. A. Smith, who writes that he is also uncertain on this point, that I have located this species in the genus *Priotrochus*, the shape of the columella calls in mind some species of *Thalotia* and *Monodonta*. Only fresh specimens can clear up its true position.

Minolia Adams.

1. *Minolia ornatissima* n. sp. Pl. III, figs 4, 4*a*; Pl. IX, fig. 6.

Stat. 181. Amboina. 54 M. Sand. 1 Spec.
Stat. 193. Sanana-bay, E. coast of Sula-Besi. Reef. 1 Spec.
Stat. 213. Saleyer. 9—36 M. 1 Spec.
Stat. 260. 2,3 Miles N. 63° W. from North point of Nusa Jaan, Kei-islands. 90 M. Sand. 2 Spec.
Stat. 261. Elat, West coast of Great Kei-island. 27 M. Mud. 1 Spec.

Shell depressed, with low conoidal spire, broadly umbilicate, thick, greenish-yellow, top-whorls and a band round the umbilicus brown, lower whorls with a row of large brown blotches at the suture, last whorl at the periphery with a zone, articulated by oblong brown squares, alternating with yellow spaces, upper and lower surface more or less distinctly variegated with brown flames and spiral dots of the same colour. Whorls $5^{1}/_{2}$, separated by an impressed suture, rather convex and slightly angular by the projection of one of the numerous lirae, these number about 6 on the penultimate whorl, and 7 on the upper part of the last whorl, besides several intermediate, elevated striae, which become very numerous towards the aperture; last whorl angular at the periphery, its convex base with numerous, crowded, elevated striae (partly wanting in a few specimens); the whole surface of the shell is covered with radial striae, crossing the lirae and giving them a beaded appearance, especially near the suture and the umbilicus, where they form regular folds. Umbilicus pervious, funnel-shaped, its wall with flat spiral lirae, crossed by much more crowded, radial, elevated striae, separated by a conspicuous angle from the basal surface. Aperture subquadrate, its upper margin slightly curved, but less so than the basal one, columellar margin nearly straight, joining the basal margin with an angle, at the end of the umbilical angle, slightly crenulated by the umbilical lirae; the margins are connected by a thin nacreous layer; interior of the aperture nacreous, smooth, slightly thickened near the margins.

Diam. maj. 6, alt. 5, apert. alt. $2^{1}/_{2}$, lat. 2, diam. of umbilicus $2^{1}/_{6}$ Mill.

Operculum of a not quite adult specimen very thin, yellowish, concave exteriorly, with many whorls, each whorl spirally striate near its proximal margin, then follows a zone sculptured only by the growth-striae, the distal margin has conspicuous radiant striae, giving to that margin a fringed appearance. The species varies in painting, some specimens, though fresh, being much less marked with brown, the markings wanting nearly entirely in the specimen from Stat. 261,

which has a still thicker shell and a purplish hue near the aperture, but sufficiently agrees in every other respect, to be nothing more than an individual variation.

Minolia ornatissima seems to be allied to *M. tasmanica* T. Woods and *T. eudeli* Desh. but differs in colour, in particulars of a sculpture and especially in the umbilical angle, which is surrounded by a brown zone, not mentioned in the allied species. The radula agrees in many respects with that of *Minolia vitiliginea* Mke. as figured by TROSCHEL (Gebiss der Schnecken, Band II, Pl. 25, fig. 24). The rhachidian tooth (R) is subquadrate, without reflected margin, the upper corners are rounded, the lower ones angular, the upper margin is slightly pointed in the centre. At the first lateral (1) I can detect no reflected margin, but the proximal upper corner, which is slightly pointed, and the proximal margin are thickened, the shape is oblong; the second (2) and third laterals are similar, the fourth one is simple, the fifth (5) has a very complicate structure, which could not well be traced, by its being covered by the adjacent teeth. The uncini are elongated, with simple cusps, at least I could discover no smaller denticles at their sides. This radula at once separates the species from the genus *Solariella*, to which it might be referred on account of its conchological characters.

2. *Minolia sp.*

Stat. 37. Sailus Ketjil, Paternoster-islands. Up to 28 M. Coralsand. 1 Spec.

The specimen is young and not taken alive. I can not identify it with any species I know, but it is in too poor condition for description.

3. *Minolia sp.*

Stat. 258. Tual-anchorage, Kei-islands. 22 M. Lithothamnion-bottom. 1 Spec.

The specimen is in still worse condition than the preceding one.

Solariella S. Wood.

1. *Solariella olivaceostrigata* n. sp. Pl. III, fig. 5; Pl. IX, fig. 7.

Stat. 95. 5° 34′.5 N., 119° 40′ E. 522 M. Stony bottom. 4 Spec.
Stat. 100. 6° 11′ N., 120° 37′.5 E. 450 M. Dead coral. 1 Spec.

Shell depressed-conoidal, rather thin, upper whorls nacreous, with a very beautiful purple and green tinge, last whorls whitish, adorned on the upper surface by rather broad, olivaceous streaks. Whorls 6, the nucleus smooth, followed by a 2^{d} and 3^{d} whorl, each with 6 spiral lirae of which the upper ones are slightly undulate, on the fourth whorl the lirae disappear, only the upper one remains and becomes beaded, it borders the broadly canaliculated suture, which in this and in the fifth whorl, is crossed by conspicuous striae, which run partly also on the convex, smooth, lower part of these whorls; near the last whorl the beads disappear, the suture becomes less broad and deep. This last whorl is nearly smooth, except for most tender spiral and radiating striae, only visible under a strong lens, and a few remote deeper striae near the suture, being

the continuation of the beads; it is strongly depressed, more convex above than below, with a blunt angle, but no keel. The umbilicus is funnel-shaped, moderately wide, pervious, its walls are smooth, with only a few growth-striae, it is bordered by a spiral ridge, which is indistinctly beaded. Aperture rounded-triangular, the upper and basal margins regularly rounded, the upper one being more curved. Columellar margin nearly straight, slightly expanded at its upper end above the umbilicus, thickened below and forming a distinct angle with the basal margin, largely due to the ending of the umbilical ridge. Interior of aperture strongly iridescent. Operculum thin, corneous, with many whorls (about 10), outer surface hollow, with irregular, radiating striae, which are more numerous and regular near the sutural line, inner surface convex, and very smooth.

Alt. $9^1/_2$, diam. maj. $11^1/_2$, apert. alt. 6, lat. $4^1/_2$ Mill.

This species, by its smoothness, may be considered as an intermediate form between the sculptured species without special colour and *S. zacallus* Melv. and allies, it is still much more conical and the umbilicus is much narrower (only 2 Mill.) than in those species.

As an exception the state of preservation of the soft parts was insufficient, however I was able to study the radula and maxillae. These last consist of triangular plates, with rounded angles, dark brown towards the free margin, with a fibrous texture, which disappears towards the posterior margin.

The radula has about 26 rows of teeth and 7 median rows, with a large number of uncini. The rhachidian tooth (R) has a subquadrate body with winged sides and a long triangular cusp with convex sides, which are serrated, the body of the first lateral (1) is nearly quadrate, with a broad triangular cusp, serrated on the distal and part of the proximal margin, the second lateral (2) is oblong and serrated like the first one, the third (3) has a quadrangular body, with a simple cusp, the fourth lateral is very large, its body irregular, its cusp long, serrated on both sides, but this is only visible on the upper side in its normal position; the uncini (U), the number of which I cannot ascertain, are long, slender, and apparently smooth, though in some of them, a few very small denticles are present, but they are only visible in an expanded position. The bodies of the median teeth are brown especially towards the centre.

2. *Solariella zacalloides* n. sp. Pl. III, fig. 6.

Stat. 204. Between islands of Wowoni and Buton. 75—94 M. Sand with dead shells. 11 Spec.

Shell depressed, slightly conical, rather thin, upper surface yellowish-white, with ziczac-lines and blotches of yellowish-brown, forming more or less distinct bands, of which one, consisting of triangular white spots and very small blotches, borders the suture, a peripheral band distinctly articulated with white and brown and an intermediate band of more arrow-headed blotches; the interstices are filled by the yellowish-brown lines, which are often confluent, leaving only small whitish spots; basal surface lighter, with scarce markings, of which a band of blotches, bordering the umbilicus, is the most conspicuous; whorls about 5; nucleus smooth, the next two whorls with a few (3 or 4) lirae, which are slightly irregular, the upper one is beaded; the lirae become less distinct, being broader and flatter on the next whorl, and are transferred in distant striae with smooth interstices; the infrasutural beads, cease on the penultimate whorl; besides this

sculpture, the whole shell has a smooth, shining appearance, with very fine lines of growth, the last whorl having only a few spiral striae near the periphery. The whorls are slightly convex, the last one is a little depressed and much enlarged, but has no keel; basal surface smooth, with fine lines of growth and short, radiating striae round the umbilicus, which is large, pervious, funnel-shaped, sculptured with lines of growth and about 9 spiral lirae. Aperture subcircular, slightly angular above, compressed near the periphery, outer margin thin, columellar margin sinuous, thickened, slightly reflected above, running without appreciable angle into the basal margin. Interior of the aperture nacreous.

Alt. 6, diam. maj. $10^1/_2$, apert. alt. 3, lat. 4, diam. of umbilicus 3 Mill.

This species varies only slightly in painting, the ziczac-lines being more or less numerous and the bands more or less distinct, the blotches are often very distinct, but sometimes obvious towards the aperture.

S. zacalloides has been named on account of its very near relationship to *S. zacalles* Melv. (Ann. Mag. Nat. Hist. Ser. 7, Vol. XII, 1903, p. 295, Pl. 20, fig. 12), indeed it might be considered with nearly the same right, as a variety of that species. MELVILL had the kindness to send me his only specimen for comparison, and at the first view it seemed to be identical. A close examination however, has shown the following differences: the new species is larger (diam. maj. $10^1/_2$ instead of 9 Mill.) thicker, less conical, the last whorl is broader in proportion, its diameter being $^2/_5$ of that of the whole shell, being only $^1/_3$ in *S. zacalles*, consequently the aperture is less rounded. The embryonic and postembryonic whorls are more depressed, they are provided with a more obvious depression near the suture. The granules near the suture are less sharp, the concentric striae shallower, on the penultimate whorl these striae extend in *zacalles* upwards to the beads, in *zacalloides* there remains a smooth zone between the upper groove and the beads. The colour is not reddish-brown (except in 2 specimens, probably on account of a rusty box), the bands are more distant. The base in *zacalles* has conspicuous brown flames, in *zacalloides* the design consists of a fine network, with a more or less conspicuous white zone and often a band of darker blotches around the umbilicus. The radiating sulci round the umbilicus, are less developed, especially towards the aperture, and are more crowded. The lirae in the umbilicus are not beaded as in *zacalles*, but nearly smooth, the grooves less impressed.

S. zacalloides, forms with *zacalles* Melv., *laevissima* Martens, *Minolia congener* Sow. and some other allied species, a group of smooth, coloured species of *Solariella*. According to the radula it is not doubtful that they belong in part, and probably all to that genus.

3. *Solariella mutabilis* n. sp. Pl. III, fig. 7; Pl. IX, fig. 8.

Stat. 59. Western entrance, Samau-strait. 390 M. Coarse coralsand with small stones. 6 Spec.
Stat. 95. 5°43'.5 N., 119°40' E. 522 M. Stony bottom. 4 Spec.
Stat. 159. 0°59'.1 S., 129°48'.8 E. 411 M. Coarse sand. 1 Spec.
Stat. 253. 5°48'.2 S., 132°13' E. 304 M. Grey clay, hard and crumbly. 1 Spec.
Stat. 260. 2,3 miles N. 63° W. from N. point of Nusa Jaan, Kei-islands. 90 M. Sand, corals and shells. 1 Spec.

Shell trochiform, moderately strong, yellowish, with a rose coloured zone on the upper part of the lower whorls, upper ones nacreous. Whorls $5^1/_2$; nucleus smooth, followed by a

whorl with 4 or 5 raised striae, and by about four ones provided with two distinct keels, of which one, at a little distance from the suture, the other at the periphery, accompanied on the last whorl by a third keel, at a little distance from the periphery, nearly on the base; these three keels are in typical specimens adorned by sharp nodules, about 30 on the upper keel, 38 on the peripheral one, and 34 on the visible part of the lower one; moreover there are 2 raised spiral striae between suture and upper keel, 5 between this and the peripheral one and 2 in the space between periphery and lower keel. This concerns the last whorl; on the upper ones, the finer sculpture disappears gradually. Umbilicus bordered by a row of coarse, compressed beads, 17 in number; space between basal and umbilical keel with 5 smooth lirae. The lower whorls have a distinct, nearly horizontal space, from the suture towards the upper keel, with small, radiating plicae, corresponding to the nodules, the spaces above and below the peripheral keel are slightly concave, the suture laying by this construction in a sort of canal. Base nearly flat, but slightly convex. Umbilicus funnel-shaped, rather large, pervious, its wall with raised, concentric and radiating striae, more or less beaded; aperture rounded-quadrangular, with angles at the ends of the keels, especially of the umbilical one; margin sharp, columella curved and slightly reflected at the upper part; interior of aperture smooth, nacreous.

Operculum many-whorled, outer 2 whorls broad; whorls sculptured by radiating and concentric striae, causing a latticed appearance, radiating striae stronger on the distal half of each whorl.

Alt. $4^3/_4$, diam. maj. $5^4/_5$, apert. alt. 2, lat. $2^1/_6$; diam. of umbilicus $2^1/_2$ Mill.

This description is made from a specimen, which I consider as the type, as it shows the characters in their full development. As however the name indicates, there are many varieties or mutations. The variations of colour consist of the greater or lesser development of the rosy colour, which is either limited to the last whorl or extends on the penultimate, even still on preceding whorls, this colour is plain, or with a tendency to form flammules, a more important difference consists in the more or less complete disappearance of the nodules on the lower keels, which seems to coincide with the sharper sculpture of the interior of the umbilicus. I have separated such specimens as:

var. *laevior* n. var. Pl. III, fig. 7*a*.

Shell with the peripheral and infraperipheral keel quite or nearly smooth (in one instance also the upper keel), sculpture of the umbilicus more conspicuous.

The specimen from Stat. 260 is quite intermediate, the nodules being present on the peripheral and infrasutural keels, I have distinguished it as *forma intermedia*. The finer sculpture of the upper part of the whorls and of the base, varies also in some degree, this last one so much, that it is nearly but never quite smooth. I have with much doubt, united with var. *laevior*, a specimen from Stat. 59, with more rounded, less deeply separated upper whorls; as it is however not in good condition, I think it ought not to be named separately.

A young specimen of $4^1/_2$ whorls from Stat. 253, is distinguished by its pronounced sculpture, the lower whorls being crossed by plications, as however traces of plicae are present on other specimens, there is no reason for separating it specifically, it may however be separated as a variety under the name of:

var. *plicifera* n. var. Pl. III, fig. 7*b*.

Shell with radiating plicae, corresponding to the nodules, and with a conspicuous raised line below the infrasutural keel, and between the peripheral and infraperipheral keels, and below this last.

The radula has a rhachidian tooth (R) with a quadrangular body, the basal corners are much wider apart, than the upper ones, the sides being expanded, the basal margin is rounded, the cusp triangular, with about 4 denticles on each side of the median cusp; the body of the first (1) and second (2) laterals are subquadrate, the cusp of the first, with about 6, of the second, with about 9 denticles, the third lateral (3) is broader and has a simple cusp. The fourth (4) is elongated, with serrated edges, the fifth tooth (5) is quadrangular without distinct cusp, the uncini are long, slender and simple, they cover the fifth lateral, which may exist in many other species.

The nearest ally of this species is *S. infralaevis* v. Martens (Die beschalten Gastropoden der deutschen Tiefsee-Expedition, 1898—99, p. 123, Pl. IV, fig. 21) but that species is "*margaritacea*, *unicolor*", *mutabilis* partly rose-coloured; *infralaevis* is smooth in the interstices of the keels and on the base, the umbilicus is much smaller than in *mutabilis*, and has smooth walls, the canal at the suture, not mentioned in the diagnose, is much narrower.

4. *Solariella marginata* n. sp. Pl. III, fig. 8.

Stat. 102. 6°4′.1 N., 120°44′ E. 535 M. Fine, yellow sand. 1 Spec.

Shell depressedly-conoidal, smooth, shining, grey, umbilicate. The only specimen, which is slightly broken, has $4^1/_2$ whorls. Nucleus smooth, followed by about 2 whorls, sculptured by spiral lirae, 6 in number on the third whorl, these lirae become fainter on the fifth whorl, where they are crossed by concentric ribs, beaded where they cross the lirae; last whorl smooth, with microscopic growth-striae, angular at the periphery; near the suture runs a flat cord, which is crenulated by short plicae, about 25 in number; base slightly convex, smooth, with strong radiating plicae round the umbilicus, each with a separate bead bordering the umbilicus, which is moderately wide, funnel-shaped, pervious, with fine spiral lirae and concentric plicae, crossing and interrupting them. Aperture broken, subtriangular, with convex upper and basal margins, columella rather straight, with a conspicuous angle near the basal margin.

Alt. $4^1/_2$, diam. maj. probably about $6^1/_2$ Mill.

This species is evidently allied to *S. biradiatula* v. Martens (Die beschalten Gastropoden der deutsch. Tiefsee-Exp. 1898—99, p. 123, Pl. V, fig. 3), but may be easily distinguished by the sculpture of the upper whorls, and the beads of the plicae, bordering the umbilicus; these plicae are stronger and longer.

Subg. *Ethaliopsis* n. subg.

Shell depressed-conical, beaded near the suture, polished, umbilicus partly or entirely covered by a callus. Operculum horny, with numerous narrow whorls.

5. *Solariella (Ethaliopsis) callomphala* n. sp. Pl. IV, fig. 1, 1*a*; Pl. IX, fig. 9.

Stat. 59. Western entrance of Samau-strait. 390 M. Coarse coralsand with small stones. 3 Spec.
Stat. 95. 5°43′.5 N., 119°40′ E. 522 M. Stony bottom. 1 Spec.
Stat. 98. 6°9′ N., 120°21′ E. 350 M. Sand. 1 Spec.
Stat. 100. 6°11′ N., 120°37′.5 E. 450 M. Dead coral. 3 Spec.

Shell depressed-conical, polished, nacreous, with a thin, pellucid, white, external layer and often a yellow line below the suture. Whorls 4 to 5, nucleus smooth, subsequent 2 whorls microscopically spirally striate, crossed by weaker growth-striae, last $2^1/_2$ whorls smooth, with only very faint traces of growth-striae and spiral striae, but with a row of oval beads, just below the conspicuous suture, periphery rounded; base nearly flat, impressed near the centre, which is more or less filled by a thick callus, which is white, with radiating striae on its external margin, granular near the columellar margin, and is ornamented there, with 4 or 5 granules. The base of the shell round the callus, is likewise provided with radiating grooves. Aperture subtriangularly rounded, very oblique, outer margin thin, slightly thickened interiorly, columellar margin thickened, its upper end pressed to the body-whorl, with a thin layer connecting the margins.

Operculum as described above, externally concave, yellow.

Varying in altitude of the shell, in the presence or absence of the yellow subsutural line and especially in the characters of the umbilicus, which is either closed, or more or less open. This is not dependent on age; for of the three specimens from Stat. 59, the largest and smallest specimens have it open, the intermediate one quite closed. In those from Stat. 100, it is quite closed or leaves perhaps a nearly imperceptible chink, in the specimen from Stat. 95, a conspicuous slit remains, that from Stat. 98 is closed.

The shell, most resembling this species is *Umbonium bairdii* Dall ("Blake" Gastropoda p. 359, Pl. 21, fig. 6), but that species is less depressed, the beads are stronger, no mention is made of spiral sculpture on the post-nuclear whorls, nor of radiating sculpture on and around the callus, or of granules on the columellar margin. I think these characters would not be overlooked by such an exact observer as Dall, and so I may conclude to its specific distinction.

If I had not examined the radula, I certainly should have located this species in the genus *Ethalia*, but the radula is quite of the same type, as that of the other species of *Solariella*. It is short, with a rather restricted number of uncini, and the shape of the teeth agrees with that of the known species. The rhachidian tooth (R) has a subquadrate body, narrower in front, with concave upper and convex basal margin, its cusp is large, longer than the base, with about 4 to 6 denticles on each side of the median denticle, the first lateral (1) has a subquadrate body, its cusp has very small denticles at its proximal, more conspicuous ones at its distal margin, the second lateral (2) has a similar body, with larger cusp and more numerous denticles at its distal margin; the body of the third lateral (3) is elongate, with a moderate cusp and only a few denticles, the fourth (4) has a very large cusp, with about 10 small denticles and a rhombic body, moreover I see a fifth lateral (5) without cusp, as described before in *S. mutabilis*. Perhaps this tooth exists in many or in all the species, but it is so much covered by the other teeth in their normal position, that it may be easily overlooked. The uncini are not very numerous, and as far as I can see, they have simple cusps. Except the callus this species resembles

S. zacalles Melv. and *S. zacalloides* Schepm. but the callus at once distinguishes it from all the species described as *Solariella*.

Solariellopsis n. g.

Shell resembling *Solariella*, but differing in the radula, which is longer, with a larger number of uncini. Teeth of the median part less denticulated. In "Die beschalten Gastropoden der deutschen Tiefsee-Expedition, 1898—99" Prof. v. MARTENS has (p. 124—127) described two species "*patula*" and "*aethiopica*" under the generic name of *Basilissa*, and located two other forms *B. ottoi* Phil, and var. *Chuni* in the same genus, on account of resemblance with *B. patula*, with the type of the genus: *B. lampra* Watson, and Dr. THIELE (l. c. p. 161) has described the radula. At my request Prof. H. M. GWATKIN of Cambridge, had the kindness to send me for comparison, the radula of a specimen of the typical species (*B. lampra*), from the same lot that served for the description in the "Challenger" report; which proved to be of so different structure, as will be described in treating on that genus, that it is impossible, if one lays any systematic value on the characters of the radula, to keep these species in the same genus. It may be very difficult to find conchological characters to separate them, unless all the species resembling *S. aethiopica*, prove to belong to the new genus. A separation will be only possible, if the radulae of a much larger number of species have been examined. v. MARTENS (l. c. p. 123) has observed that the characteristic sinus of the outer margin is conspicuous in *B. patula*, much less in *B. aethiopica* and wants in *B. ottoi*; in the figure (l. c. pl. 4, fig. 17) this is not visible, as v. MARTENS says, on account of the insufficient condition of that margin. Perhaps the sinus, which is conspicuous in *Basilissa*, will proove to give the best character for that genus.

To *Solariellopsis* belong the three species mentioned by v. MARTENS and *S. calcarata* now to be described below, moreover I have located in it, such species as seem to belong to it by their shell characters, though I have just now demonstrated, how dangerous it is to classify such species, without any knowledge of the soft parts.

1. *Solariellopsis calcarata* n. sp. Pl. IV, fig. 2; Pl. IX, fig. 10.

Stat. 302. 10° 27'.9 S., 123° 28'.7 E. 216 M. Sand and coralsand. 1 Spec.

Shell depressedly conoidal, sharply keeled, with a flat base and large umbilicus; it is nacreous under a thin, transparent, yellowish-white layer. Whorls $5^1/_2$, slightly convex, especially the last one. Nucleus smooth, shining. The sculpture consists on the upper whorls of rather distant, radiating ribs, crossed about halfway by a spiral rib or keel, forming small, sharp tubercles where they cross each other; on the third whorl, another series of tubercles appears, at some distance from the deep suture; on the penultimate whorl, the number of rows of tubercles amounts to three and the suture is conspicuously crenulated by the keel, which rests on the last whorl; this whorl is adorned by 5 spiral rows of tubercles, of which the second from above is the smallest, moreover the keel is surmounted by short, conical, rather sharp spines of which 38 are visible, if seen from below. Base nearly flat, more convex towards the

aperture, with 7 spiral rows of beads on rounded lirae, and a row of stronger ones, bordering the umbilicus. Moreover the whole last whorl is covered with irregular radiating wrinkles or riblets, instead of the regular ribs on the upper whorls, these ribs are especially conspicuous and more regular on the base, except towards the periphery where they form thinner, irregular wrinkles. Umbilicus pervious, funnel-shaped, its walls with strong wrinkles. Aperture rhombic, its upper margin regularly convex, not very thin, thickened interiorly, separated from the basal margin by a groove, corresponding to the keel, basal margin convex, crenulated, thickened interiorly. Columellar margin rather thick, concave in its upper part, terminating in a sort of tooth below. Parietal wall covered by a thick layer of enamel, thickened at its margin and connected to the pillar by a broad, rounded tongueshaped projection, covering part of the umbilicus, whose largest diameter, from the base of the columella to the opposite side, is about $^{2}/_{5}$ of the diameter of the shell.

Operculum thin, horny, many-whorled, concave at the outer side.

Diam. maj. (without spines of keel) 8, alt. $4^{1}/_{2}$; apert. alt. 2, lat. $3^{3}/_{4}$ Mill.

This is a beautiful, peculiar shell, quite unlike to anything I know.

The radula has the teeth in about 48 rows. The rhachidian tooth (R) has a rounded body, with crooked hooks at the angles of the very concave posterior margin, and is thickened by a plate of a triangular shape, with concave sides, the cusp is considerably narrower than the body, which is large in front; it has a sharp point and a few small denticles on each side; the body of the first lateral tooth (1) is larger, subquadrate, with a sharply pointed cusp and a few smaller denticles, the second one (2) has a similar, but more elongated shape and a sharper cusp, also with a few smaller denticles; the third lateral (3) is long and slender, strongly hooked, with denticles at the base of the cusp, and resembles more the uncini; of the uncini the outer ones have a toothed margin, the outermost is broader with many small denticles (U). I think most if not all the uncini, will be more or less denticulated, if seen in a favorable position.

2. *Solariellopsis limbifera* n. sp. Pl. IV, fig. 3.

Stat. 95. 5°43′.5 N., 119°40′ E. 522 M. Stony bottom. 1 Spec.

Shell moderately depressed, conical, slightly convex below, with a very strong, rounded keel, widely umbilicate, yellowish-white, whorls $6^{1}/_{2}$; nucleus smooth, upper whorls with concentric ribs and traces of one or two spiral lirae, producing small tubercles on the ribs; whorls flattened near the suture, above the upper row of tubercles, this depression is roughened by small lamellae; lower part of the whorls slightly convex. On the lower whorls, the sculpture consists of a row of rather strong tubercles, at some distance from the suture, the flattened space between suture and tubercles is also lamelliferous; a second row of smaller tubercles makes its appearance, and becomes more conspicuous on the last whorl; at some distance from the lower suture, a spiral rib, with inconspicuous beads, is crossed by irregular, waved lamellae, which spread on the large keel, which is flat above, rounded at its periphery, and adorned by sharp, compressed folds, which make it crenulated. Base sculptured by five beaded spirals, of which the outer one, placed at some distance from the margin, and the most central one, bordering the umbilicus are

double; the whole base is covered by radiating very oblique riblets. Umbilicus pervious, funnel-shaped, with 2 spiral lirae, of which the lower one is beaded, and radiating riblike striae, its largest diameter is about $^1/_3$ of the base. Aperture rhombic; outer margin rather thin, convex, internally lirate, with short folds between the lirae; basal margin short, convex, internally with a few lirae; columella broad, concave, with a conspicuous fold near the base and a small denticle above it, its upper part connected to the outer margin by a conspicuous layer of enamel, with thickened margin, and a free ear-shaped projection, covering part of the umbilicus.

Diam. maj. 12, alt. 8, apert. alt. $3^1/_2$, lat. 5 Mill.

I have located this very peculiar shell in the new genus, on account of its general resemblance with the preceding species; in many particulars it is so much different, that it is superfluous, to insist upon its specific distinctness.

3. *Solariellopsis pulchra* n. sp. Pl. IV, fig. 4.

Stat. 256. 5° 26'.6 S., 132° 32'.5 E. 397 M. Greyish green mud. 1 Spec.

Shell depressedly conoidal, with nearly flat base, sharply keeled, yellowish-white, with a large umbilicus; whorls about 6, slightly convex; nucleus smooth, upper whorls with concentric ribs; on the third whorl they are pointed above, at some distance from the suture, and near the base of this whorl, appears a row of tubercles on a spiral rib. The subsequent whorls are slightly concave or canaliculated near the suture, the fourth is sculptured by concentric ribs, with stronger tubercles at the top, near that depression; on the fifth, the sculpture consists of a row of tubercles and 3 beaded lirae, of which the third, near the keel is the strongest, this keel is compressedly crenulate, the space between suture and tubercles has short, irregular folds. The same sculpture persists on the last whorl, where the tubercles, about 30 in number, are compressed and show a tendency to become double, the crenules of the keel are slightly concave from above to below. Base nearly flat with 5 concentric beaded lirae, the beads bordering the umbilicus are the largest; the whole base is covered with rather regular, riblike striae and very fine microscopic ones, visible also on the upper part of the shell. Umbilicus large, occupying from the base of columella to the opposite side, about $^2/_5$ of the diameter of the shell, it is funnel-shaped, pervious, its wall spirally striate, with a single, spiral, beaded rib and radiating plicae. Aperture rhombic, probably not quite developed, thin, upper margin convex, basal one nearly straight; columellar margin slightly convex, reflected above, parietal wall with a thin layer of enamel.

Diam. maj. 13, alt. $6^1/_2$; apert. alt. $3^1/_4$, lat. $5^1/_2$ Mill.

Resembling the preceding species, but with a much less conspicuous keel and different sculpture, the specimen is apparently not quite adult, and the characters of the aperture are not developed.

4. *Solariellopsis spinulosa* n. sp. Pl. IV, fig. 5.

Stat. 159. 0° 59'.1 S., 129° 48'.8 E. 411 M. Coarse sand. 2 Spec.

Shell depressed, with low conical, convex spire; strongly keeled, base convex; yellowish-

white, umbilicus large; shell (not adult) consisting of about 5 slightly convex whorls, with a conspicuous suture; sculpture consisting of 2 spiral rows of short, thick tubercles, 15 or 16 in number on the last whorl, resembling small spines, one row bordering a depression at the upper part of the whorls, the other near the base, the tubercles connected by traces of spiral lirae; on the upper whorls the tubercles are connected by concentric ribs. The keel, visible on the penultimate whorl, is very conspicuous, crenulated by slightly erect tubercles. Base convex, with four beaded spiral lirae, and two intermediate ones near the aperture; that bordering the umbilicus is the strongest. Umbilicus funnel-shaped, pervious, its largest diameter occupying about $^2/_5$ of that of the shell, its walls finely striate, like the whole surface of the shell. Aperture rhombic, upper margin convex, basal one nearly straight; columellar margin slightly convex; interior smooth.

Diam. maj. 9, alt. 5; apert. alt. 3, lat. $3^1/_2$ Mill.

Though the specimens are obviously not adult, I have named and described the species, as it will be easily recognized by its sculpture. It is clearly allied to the preceding species, but differs by the position of the keel, the base being nearly as convex as the spire. The sculpture is remarkable by the erect character of the tubercles.

5. *Solariellopsis bicarinata* n. sp. Pl. IV, fig. 6.

Stat. 59. Western entrance of Samau-strait. 390 M. Coarse coralsand with small stones. 1 Spec.

Shell depressed-conical, spire convex, flatter below, yellowish-white, largely umbilicated; whorls about $5^1/_2$, convex, nucleus wanting. The sculpture consists on the upper whorls of concentric ribs, with small erect tubercles of the upper part and still smaller at the lower part of the median whorls, the upper ones bordering a concave depression near the suture. On the penultimate whorl, appears a smooth space; the sculpture consisting of 2 rows of tubercles, of which the upper ones are still a little riblike and the lower is formed of short scales, about 30 on the last whorl, hollow on the front-side; the infrasutural zone of the last 2 whorls is adorned by numerous, slightly irregular plicae; on the last whorl, the scales are placed on a flat spiral cord, having the appearance of a keel, which is separated by a sulcus from the true keel, which is strong, cord-like and slightly crenulated; near the aperture traces of intermediate lirae make their appearance. Base moderately convex, with 3 beaded spiral lirae, the innermost bordering the umbilicus. The base is moreover sculptured by radiating elevated striae, and like the upper surface, with microscopic growth-striae. Umbilicus funnel-shaped, pervious, its largest diameter from the base of the columella, to the opposite side is about $^1/_2$ of the diameter of the shell. Its wall has strong, waved, concentric lamellae. Aperture subquadrangularly-rounded, upper margin convex, basal one a little less, crenulate by the endings of the basal lirae. Columella nearly straight, slightly convex near the middle, slightly reflected in a wavy manner over the umbilicus; interior of aperture smooth, nacreous.

Diam. maj. 6, alt. $4^1/_4$; apert. alt. 2, lat. $2^2/_3$ Mill.

Differing from the preceding species, by the sulcus separating the false keel from the true one, and other particulars of the sculpture, umbilicus, etc.

6. *Solariellopsis multisquamosa* n. sp. P. IV, fig. 7.

Stat. 95. 5°43'.5 S., 119°44' E. 522 M. Stony bottom. 1 Spec.

Shell conical, with rounded periphery and slightly convex base, umbilicated, white, scarcely with a yellowish tinge. Whorls $6^1/_2$, convex. Nucleus smooth, the subsequent whorl with concentric ribs. On the lower whorls the sculpture consists of radiating ribs, with a row of compressed tubercles, at some distance from the channelled suture, which disappear on the upper whorls; these ribs are crossed by 2 spiral cords, with short, hollow scales, about 25 in number on the last whorl. On the last, rounded whorl, the base is bordered by a third row of smaller scales. Base slightly convex, with 3 rather large, spiral cords, of which that bordering the umbilicus is the broadest; they are crossed by concentric ribs, running over the whole base and making the cords crenulated. Umbilicus funnel-shaped, pervious, its wall with concentric, riblike striae, and a spiral, beaded cord near the base, its larger diameter occupies $^1/_3$ of that of the shell. Aperture subcircular, straighter on the side of the slightly concave columella, which forms a conspicuous angle with the basal margin, parietal wall with a thin layer of enamel, forming a small projection, covering part of the umbilicus. Interior of aperture smooth, nacreous, with a flattened rib near the outer and basal margin.

Diam. maj. $5^1/_4$, alt. $5^1/_2$, apert. alt. 2, lat. 2 Mill.

Differing from the allied species, by the rows of short scales, and from all the preceding species, by the rounded periphery of the last whorl.

7. *Solariellopsis muricata* n. sp. Pl. IV, fig. 8.

Stat. 59. Western entrance Samau-strait. 390 M. Coarse coralsand with small stones. 1 Spec.

Shell conical, with rounded but keeled periphery and convex base, umbilicate, yellowish-white. Whorls 6, convex, nucleus wanting. Sculpture consisting on the upper two whorls, of nearly simple concentric ribs, on the next two, the ribs are crossed by two spiral lirae, producing short tubercles on the ribs, where they cross them. Last two whorls with plicae near the channelled suture, with a row of tubercles, bordering an infrasutural sulcus; another similar row, a little lower on the concentric ribs and a third, consisting of compressed tubercles, (about 30 on the last whorl) near the base of the whorls; these tubercles, especially those of the peripheral row, are connected by spiral lirae, of which the lowest represents the keel. The convex base is sculptured by four spiral cords, of which that near the keel, bears strong, compressed tubercles; those of the more central cord are smaller, and the innermost two are strongly beaded, the inner one borders the umbilicus; moreover the base is sculptured by irregular, radiating riblets and like the upper part, by microscopic striae. Umbilicus funnel-shaped, pervious, concentrically striated and plicated, and with two beaded spirals near the base, its largest diameter about $^2/_5$ of that of the shell. Aperture subcircular, outer and basal margin with short plicae in the interior. Columella concave, reflected over the umbilicus, with two denticles near its base, of which the basal one is the largest, parietal wall with a layer of enamel, connecting the margins, slightly projected over the umbilicus, its margin a little thickened; interior of aperture inconspicuously nacreous.

Diam. maj. $5^1/_2$, alt. $4^3/_4$; apert. alt. $2^1/_4$, lat. $2^1/_2$ Mill.

Allied to the preceding species, but more depressed, with two denticles on the columella and differing also by many particulars of sculpture.

8. *Solariellopsis concavospira* n. sp. Pl. V, fig. 1.

Stat. 178. 2° 40′ S., 128° 37′.5 E. 835 M. Blue mud. 1 Spec.
Stat. 286. 8° 50′ S., 127° 2′.2 E. 883 M. Mud, evidently a thin layer. 3 Spec.

Shell depressed, with a conical spire, having a concave outline of the upper part, thin, with a very thin yellowish outer layer, only appreciable in a dry state, the shell being entirely nacreous if wet, with exception of the uppermost whorls, which are whitish; whorls 6, rather convex. Nucleus smooth, next whorl with radiating ribs; the subsequent whorls have 2 spiral keels, they are, like the last whorl, excavated near the suture; this excavation is bordered by the uppermost keel, which is adorned by short, rather sharp spines, 27 in number on the last whorl. Between this keel and the peripheral one, runs a second spiral keel with 39 smaller spines; on the peripheral keel, they are still more numerous, and have more the character of compressed folds, which extend a little upwards and less downwards, the upper part being also visible on the upper whorls, like small folds, bordering the linear suture; the space between the 1st and 2d keel is traversed by folds, running downwards from the spines of the upper keel, they often, but not always, reach the 2d keel, which projects also small folds in both directions, which however are shorter and don't reach the next keels; the space below the suture is likewise provided with folds, partly projecting from the upper keel, partly free. Base of the shell a little convex, with three spirals, which are slightly crenulated, and a strongly crenulated spiral (in one specimen accompanied by a secondary one) bordering the large umbilicus, which is pervious, funnel-shaped, its wall with elegantly curved, riblike striae or folds, which extend over the base of the shell, the infraperipheral space only remaining smooth. The whole shell is covered with very fine growth-striae, visible only under a lens. Aperture rounded-quadrangular, margins sharp, upper margin convex, basal one more straight, but still convex, columellar margin curved and forming a distinct angle with the basal margin, at the end of the umbilical keel. Columellar and outer margins connected by a very thin, nacreous layer. Interior of aperture nacreous.

Alt. 6, diam. maj. $8^3/_4$; apert. alt. $3^1/_2$, lat. $3^1/_2$, diam. of umbilicus 4 Mill.

The nearest allies of this species seem to be *Solariella actinophora* Dall and *S. effossima* Loc., but it differs in many particulars of sculpture, a. o. the new species has not the spirals in the umbilicus, on which Locard lays much value, and *effossima* is a thicker species; *S. actinophora* is less depressed, though apparently similar in the shape of the spire.

I at first located this species in *Solariella*, before I knew the dentition of the species now located in *Solariellopsis*, but now I think it may be removed with equal right to the new genus *Solariellopsis*.

9. *Solariellopsis metallica* Wood-Mason & Alcock.

Wood-Mason and Alcock. Ann. Mag. Nat. Hist. Ser. 6, Vol. 8, 1891, p. 444, with figures in the text.

Stat. 18. 7° 28′.2 S., 115° 24.6 E. 1018 M. Fine grey mud. 2 Spec.
Stat. 52. 9° 3′.4 S., 119° 56′.7 E. 959 M. Globigerina ooze. 2 Spec.
Stat. 76. 4° 22′.1 S., 118° 16′.9 E. 2029 M. Fine grey mud (Globigerina). 1 Spec.
Stat. 300. 10° 48′.6 S., 123° 23′.1 E. 918 M. Fine grey mud. 1 Spec.

The description of this species is very short, the author says only: "A brillantly nacreous species, ornamented with two spiral rows of conical tubercles and four smooth carinae on the base, exclusive of a faintly granulated one which bounds the umbilicus". The specimen is from a depth of 738 fathoms, in the Gulf of Manaar. As no measurements are given, and the rather rude figure showed some differences with the "Siboga"-shells, I hesitated to identify them, though the "Siboga"-specimens seemed to be very nearly allied. Mr. SMITH after comparing them with an authentic specimen, declared them to be the same species. A specimen of about the same diameter as the figure is higher in proportion, the measurements of the largest specimen with 8 whorls are: Alt. 22, diam. maj. 19, apert. alt. 10, lat. 8 Mill. The figure of WOOD-MASON and ALCOCK, has the same diameter but is only 19 Mill. in height, the upper corner of the aperture in the figure, looks as if the suture should be canaliculate, but not so in the specimens. The shell is not so lustrous as the authors say. They suggest that "the glistening metallic lustre of the whole exterior is largely though not entirely due to the erosion of the delicate external layer of the shell". In the "Siboga"-specimens the whole shell, perhaps with exception of the embryonic whorls, is covered by a thin yellowish layer, having the aspect of an epidermis, and only when this is removed, the metallic lustre appears. The basal carinae, if not eroded, are not smooth, in the majority of the specimens; there are only 3 of them, and a trace of an intermediate one near the aperture, the most central keel is decidedly adorned with small tubercles and also the other ones are slightly beaded or crenulated. The outer layer of the shell has a fibrous texture, in the interstices between the umbilical keel and the second basal keel, the surface has distinct riblike striae. The funnel-shaped, pervious umbilicus has the same riblike striae on its wall. The only specimen from Stat. 76 has a fourth basal keel, but the upper row of tubercles is wanting on the last whorl.

After comparing a specimen of *Basilissa aethiopica* v. Martens (Die beschalten Gastrop. d. deutsch. Tiefsee-Exp. 1898—99, p. 125, Pl. 4, fig. 20) I think this form cannot be separated as a good species from *S. metallica*, for the distinctive characters which v. MARTENS has observed may be ascribed to the condition of the shell described by WOOD-MASON and ALCOCK and to their figure. *B. aethiopica* is a larger, more developed form and should, as far as I can see, have only a varietal rank.

10. *Solariellopsis* sp.

Stat. 88. 0° 34′.6 N., 119° 8′.5 E. 1301 M. Fine grey mud. 1 Spec.

One specimen of a shell, too much worn for description, may belong to the genus *Solariellopsis*, and may be allied to the next species, it seems to be more conical, with a less canaliculate suture and a very narrow umbilicus. I have made mention of it, only on account of the great depth where it has been found.

11. *Solariellopsis pagodiformis* n. sp. Pl. V, fig. 2.

Stat. 178. 2° 40′ S., 128° 37′.5 E. 835 M. Blue mud. 1 Spec.
Stat. 300. 10° 48′.6 S., 123° 23′.1 E. 918 M. Fine grey mud. 2 Spec.

Shell conical, with convex base, nacreous, covered by a very thin, transparent layer of yellowish shelly matter. The largest specimen has 8 whorls. Nucleus white, smooth, occupying about one whorl. The next 3 whorls are straight on their upper part and separated from the lower part of each whorl by a sharp keel, crossed by rather distant radiating ribs, which form sharp tubercles in crossing the keel, and on the third whorl also near the suture. These ribs become obsolete, and disappear on the last whorls, which are smooth on their upper surface, which is only very slightly convex, with a spiral row of spinous nodules, at a little distance from the canaliculate suture, and a strong keel at the periphery; below this keel the whorls are excavated, so as to form with the channel of the next whorl, a rather wide, deep channel, over which the keel projects, producing the pagodiform shape; of the spinous nodules, the largest specimen has 25 at the keel, and about 30 near the suture. The base is rather convex, with a small umbilicus, bordered by a rather strong, crenulated, spiral rib, between this and the peripheral keel run 4 spiral lirae, which are more or less beaded, the outer one nearest to the keel, borders the concave inferior space of the upper whorls, and on this spiral runs the suture, which is slightly crenulate. Aperture subquadrangular, outer and basal margins sharp, irregular by the ends of the spirals; columella nearly straight, with a distinct angle where it oins the basal margin; this angle is caused by the umbilical rib, its upper part is slightly reflected over the umbilicus and covers it partly. The umbilicus is somewhat roughened by the lines of growth. The whole shell is covered with irregular, interrupted, hairlike lines of growth, visible only under a lens. Interior of aperture smooth.

Alt. $14^1/_2$, diam. maj. $12^1/_2$. Apert. alt. 6, lat. 6 Mill.

The three specimens of this species vary slightly in the lirae of the base; in the largest specimen from Stat. 300, the outer one is regularly beaded or crenulate; the inner less so, especially near the aperture, the two intermediate ones are nearly smooth; the smallest specimen, from the same locality, has them all beaded, though the 2^d and 3^d are smoother near the aperture, and in the only specimen from Stat. 178, the lirae are nearly smooth, only that next the umbilicus is obsoletely beaded.

This species has in outline some resemblance to *Solariella lissocona* Dall, but may be at once distinguished from that species, by its excavated sutural area and the narrower umbilicus, in the first particular it resembles *S. mogadorensis* Locard, but is quite different in shape and in many other respects. *Solariella oxycona* Smith, which has been figured [1]) may be allied, but is according to the description, still more conical, and it has no indication of a canaliculate suture. The species seems also closely allied to *Basilissa ottoi* (Phil.) var. *Chuni* v. Martens (Die beschalten Gastrop. der deutschen Tiefsee-Expedition 1898—99, pag. 127, Pl. 4, fig. 19), but it is quite different from Philippi's original figure (Fauna Moll. Regni utriusque Siciliae, pl. 28, fig. 9) of this Sicilian fossil; from the figure of v. Martens (l. c.) it differs especially by

1) Illustr. Zool. Investigator, Moll. Part III, Pl. XII, fig. 6.

the much narrower umbilicus, by the direction of the lower row of tubercles, which in *B. Chuni* are erect, and on the contrary straight or nearly declined in *S. pagodiformis*, and other characters of less importance.

Guttula n. gen.

Shell small, conoidal, smooth, pearly, perforate, aperture rounded, with an angle at the base, operculum few-whorled.

It is chiefly on account of the peculiar radula, that I have located the only species in a new genus; conchologically it resembles *Margarita*, were it not for the angular aperture. It may prove to be only a young shell, but a similar radula I have only found in what I describe with some doubt as a *Basilissa* and in the type of that genus; however the differences of the radulae are too obvious, to join them in one genus.

1. *Guttula sibogae* n. sp. Pl. II, fig. 7; Pl. IX, fig. 11.

Stat. 178. 2°40′ S., 138°37′.5 E. 835 M. Blue mud. 4 Spec.

Shell conoidal with elevated spire, periphery and base rounded, perforate, pearly, outer layer, if present, very thin and pellucid. Whorls 5, very convex, smooth, only under a strong lens very faint growth-striae and microscopic punctuations may be observed, sutures well-marked, marginated, last whorl rounded, with a convex base and a small perforation, nearly concealed by the columella. Aperture rounded, slightly angular above and stronger so below, outer margin thin, regularly curved, columellar margin concave, reflected over the small umbilicus, angular near the base, where it joins the basal margin, and slightly protracted there. Operculum thin, horny, with few whorls, concave at the outer side.

Alt. $5^1/_2$, diam. maj. $4^1/_2$, apert. alt. $3^1/_2$, lat. $2^3/_4$ Mill.

The radula has scarcely the length of 1 Mill. and is about $^1/_3$ Mill. in breadth; it has about 20 transverse rows of teeth; the rhachidian tooth (R) is broad, depressed quadrangular with rounded upper angles and pointed basal ones, it has a large reflected cusp with one strong median denticle and two smaller ones on each side, the laterals (1), one on each side, have a depressed rhombic base, with a reflected margin, ending in a sharp cusp at the proximal side. The other teeth (U) have the characters of being uncini, they are long, slender and hooked, with apparently smooth cusps, the outer ones are shorter broader, with a few denticles on each side, near the top, visible if expanded. The number of uncini is not large, but I could not ascertain the exact number.

Basilissa Watson. Fig. 1.

To the kindness of Prof. H. M. Gwatkin, I owe the knowledge of the radula of the type of the genus *Basilissa lampra* Wats. from a specimen of the original lot, collected off Jedo, at 1875 fathoms. This radula has a very peculiar appearance, which is quite different from that of the species located by v. Martens in this genus, and which I have united, with

some others, in the new genus *Solariellopsis*. In the radula now under consideration, only 3 rows obviously belong to the median part, and it is strange that the cusps instead of being reflected, as is usually the case, are stretched forwards. The rhachidian tooth (R) has a subquadrate body with somewhat protracted, rounded posterior angles, the cusp is lanceolate, with a rather sharp point and numerous, very fine denticles at the sides towards the base, the lateral (1) is triangular, with small denticles at the outer margin of the cusp. The uncini (U) which are not numerous, and of which perhaps the innermost must be considered as still belonging to the median part, are long, slender, with small denticles near their top, if seen quite flat, but which I cannot detect, if seen in the common, though reflected position.

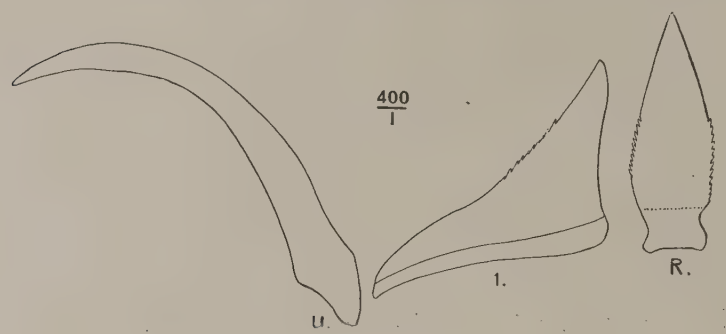

Fig. 1. Teeth of Radula of *Basilissa lampra* Wats.

As the next species agrees in many respects with this description (the cusps are however reflected) I have provisionally located it in this genus. The preceding genus, though allied by its radula, differs very much conchologically.

1. *Basilissa sibogae* n. sp. Pl. V, fig. 3; Fig. 2.

Stat. 88. 0° 34′.6 N., 119° 8.5 E. 1301 M. Grey and yellow mud. 3 Spec.
Stat. 211. 5° 40′.7 S., 120° 45′.5 E. 1158 M. Coarse grey mud. 1 Spec.

Shell conical, with concave sides, a sharp keel and slightly convex base, umbilicate, nacreous under a thin, yellowish-white layer. Whorls 7, slightly convex, especially the lower ones. Nucleus smooth, shining; by the strong keel, which is also visible on the upper whorls, the suture is well-marked. The sculpture consists on the upper whorls of thin, strongly curved, radiating riblets, which are rather crowded, but much more distant on the lower whorls, and nearly disappear on the last two, these riblets are slightly thickened towards the upper suture and below towards the keel, which is crenulate by their crossing it; one or two spiral elevated striae may be observed on

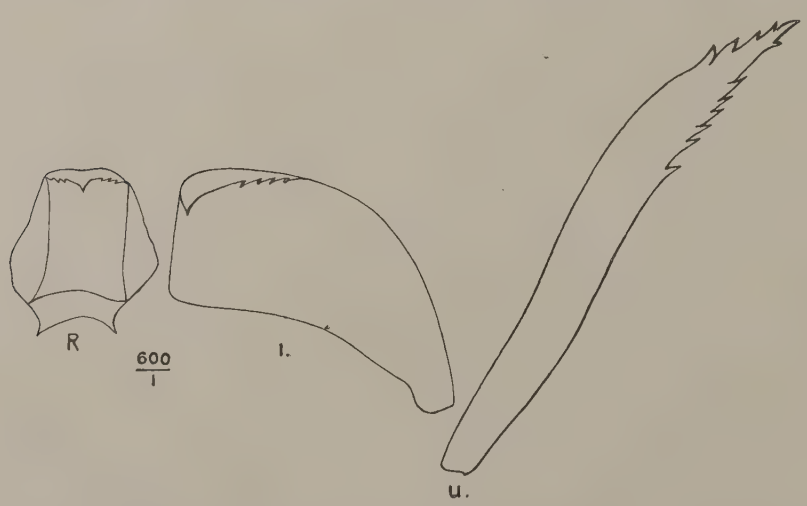

Fig. 2. Teeth of Radula of *Basilissa sibogae* Schepm.

part of the upper whorls. Moreover the whole shell is covered with fine growth-striae, which form a large sinus above near the suture and are protracted below near the keel, following the direction of the riblets; base rather smooth, but sculptured by similar striae as on the upper part, being partly riblike; the whole base is covered with spiral striae, most conspicuous towards the umbilicus and keel, leaving a smoother median space. Umbilicus pervious, funnel-shaped, its largest diameter occupying nearly $^1/_4$ of that of the base, its margin bordered by a strongly beaded rib, which can be followed still a little in its interior, which is otherwise rather smooth, though sculptured by very fine radiating and spiral striae. Aperture rhombic, upper margin thin, slightly broken, but judging after the growth-striae, sinuous above, protracted towards the keel, which appears to have been toothlike; basal margin sinuous in the same manner; columellar margin sinuous, reflected, forming an angle with the basal margin. Operculum very thin, corneous, with few whorls.

Alt. $6^1/_2$, diam. maj. 9; apert. alt. 3, lat. $3^3/_4$ Mill.

This species has a slight resemblance to *B. alta* Wats., but is much more depressed, with concave sides, and differing in many other respects, on closer examination.

The rhachidian tooth (R) of the radula has a subquadrate body, with rounded posterior corners, enlarged sides and a short, reflected cusp, with a few denticles; lateral (1) subtriangular, with a short, reflected cusp, with small denticles at the distal margin. I can detect no more teeth, belonging with certainty to the median part. Uncini (U) long, slender, with distinct smaller teeth near the top.

If the cusps of the median teeth were stretched out, they would resemble those of *B. lampra*, however they would be less slender.

2. *Basilissa* sp.?

Stat. 178. 2° 40′ S., 128° 37′.5 E. 835 M. Blue mud. 1 Spec.

With much doubt I mention a broken shell, as belonging perhaps to this genus, only on account of some resemblance to the preceding species.

Calliostoma Swainson.

1. *Calliostoma rufomaculatum* n. sp. Pl. V, fig. 4.

Stat. 204. Northern entrance of Buton-strait. 22 M. Sand with dead shells. 1 Spec.

Shell elevated-conical, imperforate, flesh-coloured, with rufous spots on the upper surface, and oblong streaks of the same colour above the suture, upper whorls violet. Sides of the spire concave towards the top, convex towards the periphery. Whorls 9, nucleus white, nearly smooth, but under a lens, with rows of small pits, the subsequent 4 violet whorls, with 3 spirals, crossed by numerous ribs, beaded where they cross each other, leaving square interspaces; lower whorls with conspicuously beaded spirals, of which there are 6 larger on each whorl, and in the interstices a much smaller thread, more or less beaded; last whorl angular at the periphery. Base convex, with 14 spiral lirae and a few intermediate ones, some of these intermediate lirae

bear subquadrate beads, the colour of the base is nearly white, with spiral rufous streaks on the lirae. Aperture subquadrate, nacreous, outer margin with 5 strong lirae, basal margin with 5 weaker ones, the margins are thin, thickened interiorly. Columella cylindrical, bluntly angulated near the middle, angular but not toothed at its base. Umbilical region slightly impressed.

Alt. $14^1/_2$, diam. maj. $12^1/_2$, apert. alt. $5^1/_2$, lat. $6^1/_2$ Mill.

By its shape this species is allied to *C. speciosum* Ads., but it differs by its regular, conspicuous sculpture and by its painting, it is also a much smaller shell, though probably adult, judging after its interiorly thickened margins of the aperture. Though I have described this species with some doubt as new, I could not identify it with any known form.

2. *Calliostoma simplex* n. sp. Pl. V, fig. 5.

Stat. 253. 5° 48'.28 S., 123° 13' E. 304 M. Grey clay, hard and crumbly. 1 Spec.

Shell elevated conical, imperforate, unicoloured, yellowish. Whorls $7^1/_2$, slightly convex, with spiral lirae, increasing from 2 on the upper body whorl, to 6 on the penultimate and 7 on the upper surface of the ultimate one; suture not deep but distinct, accompanied by the upper part of a nearly covered spiral. The spirals are closely beset with compressed beads; the upper row of each whorl is slightly the largest. Last whorl angular, keeled by the last spiral. Base nearly flat, with 10 conspicuous, beaded spirals and a few very thin ones near the aperture. Moreover the whole shell is covered with oblique, undulating, slightly laminar, radiating striae, very distinct on the base. Aperture subquadrate, outer margin thin, a little convex, with 5 spiral grooves, basal margin convex. Columella cylindrical, slightly concave, patulous but not toothed at the base, interiorly ending in a flat layer of nacre, running over the basal margin.

Alt. 14, diam. maj. $11^1/_2$; apert. alt. $4^3/_4$, lat. 5 Mill.

Resembling in shape *C. apicinum* Dall, but differing by its colour, especially by its coarser sculpture, its simple columella and not the least, by its size.

3. *Calliostoma multispinosum* n. sp. Pl. V, fig. 6.

Stat. 87. 0° 32' S., 119° 39'.8 E. 655 M. Fine grey mud. 1 Spec.

Shell conical, with concave sides, imperforate, unicoloured, yellowish. Whorls 8, flat or slightly concave, with spiral lirae, of which 3 on the upper, 10 on the last whorl. Nucleus obsolete, next whorls with spirals and radiating ribs, forming small spines when they cross; on the last 3 whorls the ribs disappear and only the spirals remain, the uppermost being in the last 5 whorls, conspicuously the largest; these lirae are closely beset with compressed spines, which resemble squamae, with very fine growth-striae in the interstices; periphery with a very sharp weakly crenulated keel. Base slightly convex, with fine growth-striae and more conspicuous spirals, of which 5 near the periphery and 5 near the centre are considerably stronger, the latter are more or less nodulous. Aperture subquadrate, outer margin nearly straight, thin, with 7 shallow grooves interiorly, basal margin convex. Columella cylindrical, slightly concave, obsoletely angular at the junction with the basal margin.

Alt. 20, diam. maj. 21; apert. alt. 8, lat. 10 Mill.

This species seems to be allied to *C. sublaeve* Smith (Ann. Mag. Nat. Hist. Ser. 6, Vol. 16, 1895, p. 8, Pl. 1, fig. 12) and still nearer to its var. *Chuni* v. Martens (Die beschalten Gastrop. der deutschen Tiefsee-Exp. 1898—99, p. 121, Pl. 4, fig. 13), but differs by its much more developed sculpture, which covers the whole upper surface of the shell in the new species. Only by a large number of intermediate forms, it might prove to be an extreme form of *C. sublaeve*.

4. *Calliostoma* sp.

Stat. 45. 7° 24′ S., 118° 15′.2 E. 794 M. Fine grey mud, with radiolariae and diatomes. 1 Spec.

Certainly a very interesting species, but unfortunately too much broken for description; the lower whorls are smooth at the upper part of the supraperipheral slope, with a double spiral rib at the periphery and another strong one, about half way the whorls. These spirals are sculptured by fine spiral and concentric, elevated striae, so the shell, if in good condition, must be of exquisite beauty.

5. *Calliostoma quadricolor* n. sp. Pl. V, fig. 7.

Stat. 49ª. Sapeh-strait. 69 M. Coral and shells. 1 Spec.
Stat. 257. In Du-roa-strait, Kei-islands. Till 52 M. Coral. 1 Spec.

Shell elevated-conical, with slightly concave sides, imperforate, yellowish, with a greenish tinge, the peripheral keel articulated with white and rufous, spire purplish at the top; whorls 7, flat, nucleus nearly smooth, under the lens with a few rows of pits, other whorls with spirals, 2 on the upper whorls, increasing to 7 on the last whorl; these spirals are crossed by concentric ribs, connecting the spirals and producing beads in crossing them, the lowest, bicoloured spiral of each whorl is the strongest, the beads on it becoming spiny, and forms a conspicuous keel on the last whorl, it is double. Base flat, with 13 unequal spirals, crossed by numerous radiating ribs, making them beaded. Aperture rhombic, upper margin straight, basal one slightly convex, columella cylindrical, slightly concave, angular at its junction with the basal margin, outer wall grooved interiorly by about 5 shallow grooves.

Alt. $8^1/_2$, diam. maj. 7; apert. alt. 3, lat. 3 Mill.

As I could not identify this shell, I begged Mr. E. A. Smith to compare it for me. According to his observations it is allied to, but not identical with *C. scobinatus* Ads. which is more convex at the base and differs in colour.

6. *Calliostoma (Astele) virgo* n. sp. Pl. V, fig. 8.

Stat. 122. 1° 58′.5 N., 125° 0′.5 E. 1165—1264 M. Stony bottom. 1 Spec.

Shell conoidal, perforate, white; whorls $6^1/_2$, convex, lower ones slightly concave below the suture; nucleus rather smooth, next whorls with from 2 to 4 weak spiral lirae below the suture, crossed by weaker radiating ribs, and with 2 or 3 stronger lirae on the lower part of each whorl, with a faint intermediate one, on the penultimate and last whorl, the spiral lirae increase in number, to about 10 weaker spirals on the upper part and 4 or 5 stronger ones

at the lower part of the upper surface, and numerous intermediate ones. Below the rounded periphery appear two or three more remote lirae, with intermediate ones and numerous, regular, flatter lirae on the convex basal part, becoming broader towards the umbilicus; the whole shell is crossed by oblique, fine, but conspicuous growth-striae. Umbilicus narrow, in the front view concealed by the columellar margin, with rather smooth walls. Aperture rounded-quadrangular, upper margin thin, curved, running uninterruptedly in the basal margin, columellar margin partly reflected over the umbilicus. Interior of aperture nacreous, with a few shallow grooves, corresponding to the stronger external lirae. Operculum brown, outer surface concave, many-whorled, each whorl divided in two parts, a central one, with oblique, strong and an external part with nearly perpendicular, fine striae.

Alt. 30, diam. maj. 30; apert. alt. 17, lat. 15 Mill.

This species resembles in shape *C. yucatecanum* Dall (Blake Gastropoda, p. 370, Pl. 24, fig. 4), but is quite different in sculpture and many other characters. I know no other species, with which to compare it.

7. *Calliostoma (Astele) scitulum* Adams.

A. Adams. Proc. Zool. Soc. Lond. 1854, p. 38.
Reeve. Conch. Ic. Vol. XIV, Zizyphinus, fig. 44.
Kiener. Coq. Viv. Vol. X, Trochus, p. 274, Pl. 90, fig. 3.
Pilsbry. Man. of Conch. Vol. XI, p. 402; Vol. X, pl. 41, fig. 27.

Stat. 144. North of Salomakië-(Damar)-island. 45 M. Coral bottom and Lithothamnion. 2 Spec.
Stat. 282. Between Nusa Besi and the N.E. point of Timor. 27—54 M. Sand, coral and Lithothamnion. 1 Spec.

The specimens agree sufficiently with those I received from Port Jackson, especially with one of the 4 specimens in my collection; the species till now, was only known from South Australia. The specimens from Stat. 144 are not quite adult, that from Stat. 282 is very young.

8. *Calliostoma (Astele) expansum* n. sp. Pl. V, fig. 9.

Stat. 59. Western entrance Samau-strait. 390 M. Coarse coralsand with small stones. 5 Spec.
Stat. 302. 10° 27'.9 S., 123° 28'.7 E. 216 M. Sand and coralsand. 1 Spec.

Shell depressed-conical, with convex sides, umbilicate, yellowish, with purple-brown blotches at the peripheral keel and rarely (in one specimen) with fainter blotches and flames of the same colour; whorls 6, convex, slightly depressed above the suture and consequently above the keel of last whorl; nucleus smooth, followed by about one whorl with only a few spiral striae, next whorls with conspicuous, spiral, beaded lirae; with radiating plicae extending either over the whole whorl or more or less at the upper part of each whorl; last whorl with 10 spiral lirae, of which the lower form a sharp keel and the upper one is the strongest; the lirae are elegantly beaded and connected by irregular, rather strong, elevated striae or plicae in the interstices; base nearly flat, slightly convex, especially towards the aperture, with eight beaded, spiral lirae and a few intermediate ones, the interstices are wider than on the upper surface, the most central one runs nearly in the umbilicus. The base is crossed by rather regular, radiating plicae, not running

in one direction; umbilicus rather large, pervious, its wall nearly smooth, it is partly covered by the columellar margin. Aperture rhombic, upper margin convex, thin, with a broad callosity interiorly; basal margin convex, thick; columella thickened, curved, with a knob at some distance from the base, expanded at its upper part, and partly covering the umbilicus; margins connected by a callous layer; columella joining the base by a blunt angle. Interior of aperture nacreous, smooth.

Alt. $5^1/_2$, diam. maj. $7^1/_2$; apert. alt. $2^1/_2$, lat. $3^1/_2$ Mill.

I know no species with which to compare this new form. It has no resemblance with any of the figured species, but the aperture agrees sufficiently with such species as *C. perspectivum* Koch.

9. *Calliostoma (Astele) crassicostatum* n. sp. Pl. VI, fig. 1.

Stat. 133. Lirung, Salibabu-island. 36 M. Mud and hard sand. 1 Spec.

Shell elevated-conical, with nearly straight sides, slightly attenuated towards the spire, yellowish with purple-brown flames and rufous spots on the lirae. Whorls $7^1/_2$, nucleus probably smooth, but slightly worn, followed by three whorls, each with 3 strong, spiral lirae, of which the basal one is the strongest, they are beaded where they are crossed by concentric ribs, which disappear on the subsequent whorls; these have 3 strong spirals, of which the basal one forms a conspicuous keel, a little above the linear suture, which on the lower whorls is accompanied by a thin thread and a shallow channel between this and the keel; an intermediate spiral, between the 1st and 2d one, becomes on the last whorl nearly a 4th spiral; on the fourth whorl the lirae are still beaded, on the fifth this is only the case with the upper one, the interstices of the last 4 whorls are nearly smooth, with very fine growth-striae and only a few deeper ones, especially on the upper whorls; base rather convex, with 8 lirae, the external one bordering the subperipheral channel, the external 5 lirae are narrow, with broad, smooth interstices, the central 3 are broad, all are ornamented with rufous spots; the base is covered with very fine growth-striae and more remote deeper striae, rendering the central 2 lirae crenulated. Umbilicus moderately wide, but seen from the base, nearly closed by a very strong, white, striated funiculus. Aperture depressedly-rounded, with a thin but not quite intact margin, which is crenulated by the external lirae. Columella cylindrical, very concave, slightly reflected over the umbilicus, its base only very little angular; interior of aperture nacreous, smooth.

Alt. 9, diam. maj. 8; apert. alt. 3, lat. $3^1/_2$ Mill.

This new species has some superficial resemblance with the european *C. zizyphinum*, but is at once distinguished by its umbilicus, bordered by a strong funiculus or rib. I know no species of the group *Astele*, allied to it.

10. *Calliostoma (Astele)* sp.

Stat. 273. Pulu Jedan, east coast of Aru-islands. 13 M. Sand and shells. 1 Spec.

Too young for identification or for description as a new species.

11. *Calliostoma (Astele) monodon* n. sp. Pl. VI, fig. 2.

Stat. 95. 5°43′.5 N., 119°40′ E. 522 M. Stony bottom. 3 Spec.

Shell conical with slightly convex sides, perforate, yellowish-white. Whorls 6, slightly convex, nucleus smooth, the other whorls sculptured by numerous concentric ribs and spiral lirae, about 9 in number on the penultimate whorl, producing a cancellated appearance; where they cross, they form small tubercles. Last whorl angular at the periphery. Base flat, sculptured by 12 spiral lirae and by radiating riblets, which make the inner 9 lirae beaded, the outer ones being crenulated. Umbilicus small, funnel-shaped, pervious, with smooth walls. Aperture rhombic, upper margin nearly straight, thin, thickened interiorly by a broad, white rib, with a few short plicae; basal margin slightly convex, with a few inconspicuous plicae and a strong tooth near the columella, forming the end of an internal rib, winding round the columella. Columella nearly straight, its upper part thickened, covering part of the umbilicus, parietal wall with a thin layer of enamel.

Alt. $4^{3}/_{4}$, diam. maj. $5^{1}/_{2}$; apert. alt. 2, lat. $2^{3}/_{4}$ Mill.

The generic position of this species is a little uncertain, I know of no species to which it is allied; it is very remarkable by the tooth at the base of the aperture, which is only developed in one of the three specimens, the other ones being young.

12. *Calliostoma (Perrinia) Elisa* Gould.

Gould. Proc. Bost. Soc. Nat. Hist. 1849, p. 92.
Pilsbry. Man. of Conch. Vol. XI, p. 417, Pl. 67, fig. 67, 68, 69, 74.

Stat. 49ª. Sapeh-strait. 70 M. Coral and shells. 1 Spec.
Stat. 64. Kambaragi-bay, Tanah Djampeah. 32 M. Coral, coralsand. 2 Spec.
Stat. 71. Makassar and surroundings. Up to 32 M. Mud, sand with mud. 2 Spec.
Stat. 260. Near Nuhu Jaan, Kei-islands. 90 M. Sand, coral and shells. 1 Spec.
Stat. 313. East of Dangar Besar, Saleh-bay. Up to 36 M. Sand, coral and mud. 8 Spec.
Stat. ? 1 Spec.

As Pilsbry mentions as localities Singapore and China, it is not strange to find this species also on different spots of the East Indian Archipelago, however it has not yet been recorded from there, as far as I know.

13. *Calliostoma (Perrinia) squamocarinatum* n. sp. Pl. VI, fig. 3.

Stat. 51. Madura-bay. 69—91 M. Fine grey sand; coarse sand with shells and stones. 2 Spec.
Stat. 260. Near Nuhu Jaan, Kei-islands. 90 M. Sand, coral and shells. 1 Spec.

Shell elevated-conical, with slightly convex sides, yellowish grey, with dark brown spots at the upper part of whorls and below the periphery; whorls $6^{1}/_{2}$, slightly convex, with a prominent keel, narrowly perforate. Nucleus rather smooth, blunt, followed by a whorl which is simply costate, the other whorls have 3 spiral lirae, crossed by ribs, which form blunt spines on the upper spiral, round beads on the median one and compressed, spinelike squamae on the third spiral or peripheral keel; on the last whorl these ribs become lamellose and double,

each rib consisting of about 2 lamellae, sutures deeply channelled. Base convex, with 5 beaded spirals and lamellose ribs. Moreover the whole shell is covered with microscopic growth-striae. Umbilicus narrow, partly covered by the columellar margin. Aperture subquadrangularly rounded, outer and basal margins rounded in outline, thin, thickened interiorly, with 10 spiral lirae; columellar margin cylindrical, only slightly curved, with a rather strong transverse fold, its base running without angle in the basal margin, slightly expanded over the umbilicus, its upper part, connected by a thin layer, with the outer margin.

Alt. $6^1/_4$, diam. maj. $4^3/_4$; apert. alt. $2^1/_2$, lat. $2^1/_2$ Mill.

Closely allied to *C. elisa* Gld. which is however imperforate, without brown markings and has not the conspicuous spinous keel of the new species. In colour it should resemble *C. maculata* Brazier, which has however four spiral lirae and is imperforate.

14. *Calliostoma (Perrinia) nigromaculatum* n. sp. Pl. VI, fig. 4.

Stat. 43. Pulu Sarassa, Postillon-islands. Up to 36 M. Coral. 1 Spec.

Shell elevated-conical, with convex sides, imperforate, yellowish-white, with black-brown square spots, running from the suture to the keel, and more numerous narrow spots and streaks of the same colour on the base; nucleus wanting; remaining whorls $7^1/_2$, slightly convex, separated by a narrow channelled suture. Upper whorls slightly worn, with 3 and 4 spiral lirae, which increase to 5 in number on the last 4 or 5 whorls; they are crossed by slightly undulating ribs, with beads where they cross each other, the lowest of the lirae forming the peripheral keel is the largest, and on this one the beads have a tendency to become squamate, (but not so much as in the preceding species). Last whorl descending in front and here the ribs form irregular lamellae; periphery of last whorl angular. Base convex, with 5 spiral, beaded lirae, the interstices with strong, irregular lamellae. Aperture nearly round, angular at the upper part and very faintly so at the base of the columella. Outer and basal margins thin, thickened interiorly, with 10 conspicuous lirae, that nearest the columella toothlike. Columella cylindrical, with a groove round its upper part, running at its left side towards a square notch, formed by a square, toothlike fold at the basal part and the most proximal of the internal lirae of the base, below the notch are one large and two small denticles; parietal wall callous.

Alt. $10^1/_4$, diam. maj. $6^1/_2$; apert. alt. $3^1/_2$, lat. $3^1/_4$ Mill.

Distinguished from the preceding species, with which it is allied, by its strongly elevated shape, by 5 lirae instead of 3 (*C. maculata* Braz. with 4) and by the characters of the columella, which are more complicated than in the allied species. The columellar notch calls in mind, that of some species of *Monodonta* and *Euchelus*.

15. *Calliostoma (Perrinia) cancellatum* n. sp. Pl. VI, fig. 5.

Stat. 59. Western entrance of Samau-strait. 390 M. Coarse coralsand with small stones. 1 Spec.

Shell elevated-conical, with convex sides, imperforate, yellowish-white, with a nacreous lustre and numerous yellowish-brown spots, which are darker near the upper part of each whorl and on the third whorl, the first and second being without markings. Nucleus wanting, remaining

whorls 5, slightly convex, with a narrow canaliculate suture. First whorl with rather distant ribs. Next whorl with 3 spiral lirae and radiating ribs; last 3 whorls with 5 spirals and thinner radiating ribs, which make the shell cancellated; these ribs become lamellose on the lower whorls; lirae beaded where the ribs cross them, less obvious on the lower whorls, the uppermost of the lirae on each whorl with a series of small tubercles, giving a coronated appearance to the whorls. Last whorl rounded, the peripheral spiral being only very little prominent. Base convex, with 6 beaded lirae, cancellated by numerous, irregular, radiating ribs. Aperture nearly rounded, outer and basal margins rounded, thin, thickened interiorly, with about 17 short lirae on the internal rib, of which that near the columella slightly tooth-like. Columella cylindrical, rather straight, with a tooth-like fold at the base, bordering a rounded notch, parietal wall callous. Interior of aperture with a few grooves.

Alt. 7, diam. maj. 5; apert. alt. $2^3/_4$, lat. $2^1/_2$ Mill.

Though the only specimen is slightly broken, I have described it, as all the characters were present and the species seemed to be new. I know no species in the group *Perrinia* which is nearly allied to it.

Euchelus Philippi.

1. *Euchelus atratus* Gmelin.

GMELIN. Syst. Nat. Ed. XIII, p. 3601.
KIENER. Coq. Viv. Vol. X, Trochus, p. 293, Pl. 94, fig. 3.
PILSBRY. Man. of Conch. Vol. XI, p. 439, Pl. 38, fig. 22; Vol. X, Pl. 41, fig. 25, 26.

Stat. 16. Bay of Kankamaraän, S. coast of Kangeang. Shore. 1 Spec.
Stat. 34. Labuan Pandan, Lombok. Coral reef. 1 Spec.
Stat. 58. Seba, Savu. Reef. 2 Spec.
Stat. 60. Haingsisi, Samau. Reef. 1 Spec.
Stat. 64. Kambaragi-bay, Tanah Djampeah. 32 M. Coral, coralsand. 1 Spec.
Stat. 71. Makassar and surroundings. Up to 32 M. Mud, sand with mud. 2 Spec.
Stat. 86. Dongala, Palos-bay, Celebes. Reef. 1 Spec.
Stat. 89. Pulu Kaniungan Ketjil. Reef. 1 Spec.
Stat. 93. Pulu Sanguisiapo, Tawi-Tawi-islands, Sulu-archipelago. 12 M. Lithothamnion-bottom, sand and coral. 1 Spec.
Stat. 116. West of Kwandang-bay-entrance. 72 M. Fine sand with mud. 1 Spec.
Stat. 127. Taruna-bay, Great Sangir-island. Reef. 1 Spec.
Stat. 131. Beo, Karakelang-islands. Reef. 1 Spec.
Stat. 169. Atjatuning, West coast of New-Guinea. Reef. 1 Spec.
Stat. 174. Waru-bay, N. coast of Ceram. Reef. 1 Spec.
Stat. 193. Sanana-bay, East coast of Sula Besi. Reef. 2 Spec.
Stat. 231. Amboina. Reef. 2 Spec.
Stat. 240. Banda. Reef. 1 Spec.
Stat. 273. Pulu Jedan, East coast of Aru-islands. 13 M. Sand and shells. 2 Spec.
Stat. 313. East of Dangar Besar, Saleh-bay. Up to 36 M. Sand, coral and mud. 35 Spec.

The numerous specimens vary in shape, size and colour, as already stated by different authors.

2. *Euchelus ruber* A. Adams.

A. ADAMS. Proc. Zool. Soc. Lond. 1851, p. 176.
PILSBRY. Man. of Conch. Vol. XI, p. 440, Pl. 67, fig. 79.

Stat. 93. Pulu Sanguisiapo, Tawi-Tawi-islands, Sulu-archipelago. Reef. 3 Spec.
Stat. 99. North-Ubian. 16—23 M. Lithothamnion-bottom. 3 Spec.
Stat. 301. Pepela-bay, East coast of Rotti-island. 22 M. Mud, coral and Lithothamnion. 2 Spec.
Stat. 315. Sailus Besar, Paternoster-islands. Up to 36 M. Coral and Lithothamnion. 1 Spec.

The species is new for the E. Indian-Archipelago, at least PILSBRY mentions only China as the habitat. It is a much smaller species than the preceding one, the type may be at once distinguished by the beautiful rose-colour.

var. *brunneus* Pilsbry.

PILSBRY. Proc. Acad. Nat. Sciences Philadelphia, 1901, p. 28.

Stat. 240. Banda. 9—45 M. Black sand, coral, Lithothamnion-bank. 1 Spec.

This shell agrees exactly in sculpture with *E. ruber* and with specimens of var. *brunneus* received from Japan, it is still smaller than PILSBRY's specimens, being only $5^1/_2$ Mill. in altitude instead of $6^1/_2$. In colour it differs little from many specimens of the preceding species. The interstices of the spiral lirae are narrow, as well in the type as in the variety. I can detect no intermediate lirae, nearly always very distinct in *E. atratus*, only faint traces of them may be eventually found, when the interstices are slightly broader.

3. *Euchelus intricatus* Gould.

GOULD. Proc. Boston Soc. Nat. Hist. 1849, p. 167.
KIENER. Coq. Viv. Vol. X, Trochus, p. 249, Pl. 84, fig. 3 (*Bourcieri Crosse*).
PILSBRY. Man. of Conch. Vol. XI, p. 440, Pl. 67, fig. 62, 63.

Stat. 78. Lumu-Lumu-shoal, Borneo-bank. 34 M. Coral and coralsand. 1 Spec.

This species is also new to the fauna, its habitat, mentioned by PILSBRY, being Viti-islands, New Caledonia, and with doubt also Japan. In his "Catalogue of the Marine Mollusks of Japan, collected by F. STEARNS", published in 1895, PILSBRY does not mention it.

4. *Euchelus ringens* n. sp. Pl. VI, fig. 6.

Stat. 98. 6° 9′ N., 120° 21′ E. 350 M. Sand. 1 Spec.

Shell globose-conical, probably imperforate, rather thin, flesh-coloured, with 3 rows of dark brown spots on the upper whorls, nucleus white, lower $2^1/_2$ whorls with faint brown blotches near the upper part and scattered brown dots. Sutures deep, canaliculate, whorls 5, convex. Nucleus smooth; upper whorls with from 2 to 3, penultimate one with 5, last with 14 spiral lirae, and a few intermediate ones, becoming more numerous towards the aperture, the principal lirae are conspicuously beaded, the intermediate ones less so, the interstices are crossed by lamellae, often corresponding to the beads. Body whorl slightly depressed but not angular. Aperture rounded, very oblique, margin slightly expanded, with a broad, flat rib interiorly, with numerous elongate wrinkles and a few shorter intermediate ones at the outer margin; margins connected by a thin expanded callosity with regular wrinkles, the whole circumference of the

aperture is wrinkled; columellar margin broken, probably smooth, ending in a large subbifurcate tooth, bordering a rather narrow, deep notch; opposite to this tooth a smaller tooth of the basal margin, borders the notch. Umbilical region with a groove.

Alt. $7^1/_2$, diam. maj. 8; apert. alt. 4, lat. 6 Mill.

This shell resembles in shape, sculpture and in some degree in colour *E. baccatus* Menke, but it is considerably smaller and more depressed. The margins are more wrinkled, the tooth of the columella and the notch are much larger, the right margin is expanded; the lirae are less numerous, with larger interstices and more conspicuous intermediate lirae.

It is with some hesitation that I have described this species, the only specimen being incomplete; there is a small hole at the place of the umbilicus, but it has the appearance of being caused by the same accident, that has mutilated the columella.

5. *Euchelus (Hybochelus) fossulatus* Souverbie.

SOUVERBIE. Journ. de Conch. 1875, p. 39, Pl. 4, fig. 5.
KIENER. Coq. Viv. Vol. X, Trochus, p. 391, Pl. 117, fig. 2.
PILSBRY. Man. of Conch. Vol. XI, p. 444, Pl. 38, fig. 15, 16.

Stat. 258. Tual-anchorage, Kei-islands. 22 M. Lithothamnion, sand and coral. 2 Spec.

The specimens are young, one of them is very small, but even the largest has a whorl less than has been recorded in the original description, its diameter is only $7^1/_2$ Mill. against 10 in SOUVERBIE's specimen, and $12^1/_2$ as stated by PILSBRY. The species was hitherto only known from New Caledonia and the Andamans.

6. *Euchelus (Tallorbis) roseola* Nevill.

G. and H. NEVILL. Journ. Asiatic. Soc. Beng. Vol. 38, 1865, p. 160, Pl. 17, fig. 5.
PILSBRY. Man. of Conch. Vol. XI, p. 446, Pl. 57, fig. 15.

Stat. 66. Bank between islands of Bahuluwang and Tambolungan, South of Saleyer. 8 M. Dead coral; Lithothamnion. 1 Spec.

The shell, though very characteristic, seems to be young, its diameter being scarcely $5^1/_2$ Mill. instead of 11 in NEVILL's description. Its locality is new, as NEVILL had got it only from the Southern Province of Ceylon. PILSBRY is in doubt about its systematic position. Indeed I should think NEVILL was right in creating the new genus *Tallorbis* for it. However I think he was wrong in approaching it to *Thalotia*, as it resembles much more the preceding species, than any *Thalotia* I know. As the only specimen is inhabited by a crustacean, I am unfortunately unable to decide the question, by examining the radula.

Danilia Brusina.

I have made use of the name *Danilia* for this group of shells, in accordance with PILSBRY (Man. of Conch. Marine Series, Vol. XI, p. 448, 1889) though LOCARD in a more recent publication (Expéditions scientifiques du Travailleur et du Talisman, pendant les anneés 1886—1893. Moll. Testacés, Tome II, 1898, p. 19) has choosen the older name *Craspedotus* Phil., for PILSBRY,

l.c. has stated that this name has been used in 1844 for a genus of *Curculionidae* by SCHOENHERR; LOCARD agrees with PILSBRY in rejecting the name *Olivia*, employed by CANTRAINE, as this name was preoccupied by BERTHOLINI in 1810, for a genus of Sponges. The only recent species *D. Tinei* Calcara was known from the Mediterranean and Adriatic Seas and the Gulf of Gascogne, when in 1896 DAUTZENBERG and FISCHER (Extr. des Mémoires de la Soc. Zool. de France 1896, p. 81, Pl. XX, fig. 9, 10) described a new species *D. affinis* from the Azores. As long as the anatomy of this group is not known, I think it is better to consider it as a separate genus and not as a subgenus of *Euchelus*, like PILSBRY has done; indeed the strong varix of the outer lip and the particulars of the dentition of the aperture, seem sufficient to separate it generically. The latter calls in mind some species of *Clanculus* rather than of *Euchelus*.

1. *Danilia Weberi* n. sp. Pl. II, fig. 6.

Stat. 105. 6° 8′ N., 121° 19′ E. 275 M. Coralbottom. 6 Spec.

Shell globose-conoidal, imperforate, thin, spire more or less elevated, embryonic whorls wanting, remaining whorls about 6, very convex, especially the penultimate and ultimate ones, the upper whorls forming a cone. Colour slightly variable, ground-colour light yellowish-brown, nearly plain or with darker flames and blotches, which are always present on the varix, the majority of the specimens has two or three series of darker spots on the upper whorls and two specimens have a row of large blackish patches near the suture of the last whorl. The shell is covered with a large number of spiral lirae, often with intermediate ones, the number of lirae being about 7 on the penultimate whorl, but amount with the intermediate ones to 15 or 16; they are crossed by numerous riblike striae, producing short spines on the points of intersection, and very fine lines of growth; on the upper whorls the lirae diminish in number, they become nearly obsolete on the uppermore whorls, and disappear at last, leaving only the concentric ribs. The suture is deep, especially between the penultimate and ultimate whorls, on this last the suture descends conspicuously. The periphery of last whorl is rounded, only apparently keeled by the strong peripheral lira. The base is ornamented by about 12 beaded lirae, with ribbed interstices. The oblique aperture is rounded-ovate, with a very thin, slightly expanded outer and basal margin, encircled by a strong, compressed, external varix. The margin is thickened interiorly by a rather strong crenulated rib at some distance from the outer rim; the parietal wall is covered by a much expanded, smooth layer, loosened from the body-whorl near the place of the wanting umbilicus. The columella is very strong and tortuous, thickened above, then slightly attenuated, with a strong square tooth, from which a tortuous rib runs to the left, enclosing a triangular pit and forming a deep sinus between the columella and basal margin. Interior of aperture very iridescent, but covered in part in the adult shells, by the porcellaneous internal rib.

Alt. 16, diam. maj. 11; apert. alt. 6, lat. 5 Mill.
Alt. $12^1/_2$, diam. maj. 10; apert. alt. $5^1/_2$, lat. $4^1/_2$ Mill.
Alt. $11^1/_2$, diam. maj. $9^1/_2$; apert. alt. $5^1/_2$, lat. $4^1/_2$.

This new species of *Danilia* differs (according to the figures) so much in shape, size and sculpture from *D. Tinei* and *D. affinis*, that it seems superfluous to make an exact comparison.

I have the pleasure to name it after the leader of the expedition.

Fam. Umboniinae.

Umbonium Link.

1. *Umbonium depressum* Adams.

A. Adams. Proc. Zool. Soc. Lond. 1853, p. 188.
Reeve. Conch. Ic. Vol. XX, Rotella, fig. 2.
Pilsbry. Man. of Conch. Vol. XI, p. 451, Pl. 58, fig. 24, 25.

Stat. 323. Sangkapura-roads, Bawean-island. 12 M. Mud. 1 Spec.

Not wishing to decide the question, if *U. depressum* is a good species, or merely a variety of *U. vestiarum* Lin., I have left to this single specimen the name applied by Adams. It is only an empty shell, so I was unable to look for differences in the radula.

Ethalia Adams.

1. *Ethalia guamensis* Quoy and Gaimard. Fig. 3.

Quoy & Gaimard. Voy. de l'Astrolabe. Zool. Vol. III, p. 267, Pl. 61, fig. 32, 33. (*Rotella*).
Kiener. Coq. Viv. Rotella, p. 7, Pl. 2, fig. 18.
Fischer. Coq. Viv. Vol. X, Trochus, p. 378, Pl. 115, fig. 3 (*callosus*).
Reeve. Conch. Ic. Vol. XX, Rotella, fig. 18.
Pilsbry. Man. of Conch. Vol. XI, p. 458, Pl. 59, fig. 38, 39; Pl. 57, fig. 41, 42.

Stat. 37. Sailus Ketjil, Paternoster-islands. Up to 18 M. Coral and coralsand. 2 Spec.
Stat. 184. Kampong Kelang, South coast of Manipa-island. 36 M. Coral, sand. 2 Spec.
Stat. 240. Banda. 9—36 M. Lithothamnion-bank. 18 Spec.
Stat. 279. Rumah-Kuda-bay, Roma-island. 18—45 M. Mud and sand. 1 Spec.

In nearly all the specimens the callus is white, only in that from Stat. 37, it is light pink; those from Banda are generally dark-coloured at the upper surface. The species was not yet mentioned from the Archipelago.

The radula has not yet been described, as far as I know. The teeth, especially those of the central part are very thin and transparent, without distinct cusps; the rhachidian tooth (R) is broadly winged, bow-shaped, at its upper part it is thickened, but I cannot detect a true cusp, the first (1), second (2), third (3) and fourth (4) laterals are about equal in shape, the first one is subtriangular, with a slightly concave inner and convex outer margin, thickened at its upper part, the second is very similar, the third is narrower and the fourth is more subquadrangularly elongate; the fifth (5) or last lateral is club-shaped, thickened above, without cusp. Of the uncini (U) the proximal one has a short, broad cusp, with a small denticle near the base of the distal margin; the second is more elongate, also with a small denticle; the

subsequent ones are much more elongate, I can detect no denticles, perhaps because the cusps lie so close together, as to cover each other in part.

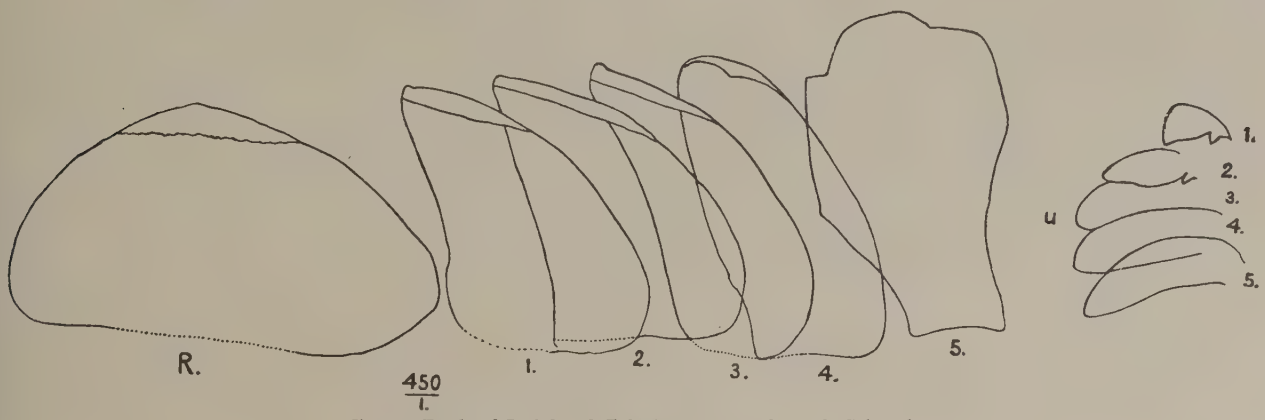

Fig. 3. Teeth of Radula of *Ethalia guamense* Quoy & Gaimard.

The shape of the rhachidian tooth differs much from that of *Umbonium (Rotella)* as figured and described by TROSCHEL (Gebiss der Schnecken, Vol. II, p. 220, Pl. 21, fig. 5 and 6), for though TROSCHEL says of *Rotella elegans*, that the rhachidian tooth is: "viel breiter als lang", he says on the contrary of the genus: "Die Mittelplatte ist länger als breit", and in his figures, of which that of *R. elegans* is somewhat strange and irregular, the median teeth are elongate. Of the measurements he says (l. c. p. 221): "Breite der Mittelplatte 0,0125 mm., Länge derselben 0,03 mm. The shape of the other teeth, which in *Umbonium*, according to TROSCHEL, have no cusps in the median field, agrees sufficiently, to admit relationship.

2. *Ethalia striolata* Adams, var. *trilobata* Sowerby.

SOWERBY in: REEVE, Conch. Ic. Vol. XX, Rotella, fig. 20.
PILSBRY. Man. of Conch. Vol. XI, p. 460, Pl. 58, fig. 20.

Stat. 133. Lirung, Salibabu-island. Up to 36 M. Hard sand. 1 Spec.
Stat. 313. East of Dangar Besar, Saleh-bay. Up to 36 M. Sand. 3 Spec.

It seems that PILSBRY has not seen this species, as he gives no measurements; of the largest Siboga-specimen they are:
Diam. maj. $13^1/_2$, alt. $8^1/_2$; apert. alt. 7, lat. 6 Mill.

3. *Ethalia minolina* Melvill, var. *infralaevior* n. var. Pl. VI, fig. 7.

Stat. 37. Sailus Ketjil, Paternoster-islands. Up to 18 M. Coral and coralsand. 2 Spec.
Stat. 66. Bank between islands of Bahuluwang and Tambolungan, south of Saleyer. 8 M. Dead coral, Halimeda, Lithothamnion. 2 Spec.
Stat. 240. Banda. 9—36 M. Lithothamnion-bank. 1 Spec.

MELVILL has described (Mem. and Proc. Manch. Literary and Philos. Soc. Vol. 41, p. 20, Pl. 7, fig. 24) the type of a new species, allied to *E. striolata* Ads. from the Persian Gulf, and though the specimens under consideration, differ in some degree from a specimen from that locality, they agree in so many points, that I think it is better to give them only varietal rank.

The Siboga specimens are slightly less depressed, the whorls are more convex, especially below the suture, the last whorl is less angular, the umbilicus narrower. The chief character, which distinguishes the variety is that the base of the shell is much smoother, in one specimen from each station, the spiral striae are completely wanting, in one from Stat. 37, which is however of very doubtful identification, as it is very young, and in another from Stat. 66; spiral striae are visible, but less strong than in the typical specimen, especially these last intermediate specimens have induced me, to consider the shells as belonging to a variety. The sculpture consisting of rather irregular spiral striae, crossed by fine but inconspicuous, oblique growth-striae, is quite identical. The colour-pattern though variable, is similar, especially in the specimens from Banda.

Fam. HALIOTIDAE Fleming.

Haliotis Linné.

1. *Haliotis squamata* Reeve.

REEVE. Conch. Ic. Vol. XII, Haliotis, fig. 35.
WEINKAUFF. Mart.-Chemn. Conch. Cab. Ed. II, Haliotis, p. 59, Pl. 23, figs. 1, 2.
PILSBRY. Man. of Conch. Vol. XII, p. 91, Pl. 18, fig. 2.

Stat. 34. Labuan Pandan, Lombok. Reef. 1 Spec.

To this species I must refer the only specimen from Stat. 34, which has a rather juvenile appearance. It is less elongated in proportion to its breadth, than in the cited figures, and two specimens from Port Jackson, in my collection. REEVE gives no measurements, those known by me, are:

WEINKAUFF, l. c. long. 43, lat. 26 Mill.
PILSBRY, l. c. long. 69, lat. 42 Mill.
largest specimen from Port Jackson, long. 78, lat. 48 Mill.
smaller specimen from Port Jackson, long. 60, lat. 38 Mill.
specimen from Stat. 34, long. 38, lat. 28 Mill.

moreover only 5 perforations are open. According to WEINKAUFF, this should be from 6—8, PILSBRY says 7 or 8. In the specimens from Port Jackson, one has 6 the other 7 open perforations and of this last specimen the 8th is again closed. As however the other characters, especially those of sculpture agree and the number of open perforations and of relative length and breadth vary, I don't venture to describe a new species on such slight differences.

2. *Haliotis varia* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 780, sp. 650.
RUMPH. Amb. Rariteitkamer, p. 121, Pl. 41, fig. G.
REEVE. Conch. Ic. Vol. XII, Haliotis, fig. 4.
WEINKAUFF. Mart.-Chemn. Conch. Cab. Ed. II, Haliotis, p. 10, Pl. 3, fig. 4.
PILSBRY. Man. of Conch. Vol. XII, p. 95, Pl. 17, figs. 91, 93, 99, 100; Pl. 23, figs. 52—55.

Stat. 34. Labuan Pandan, Lombok. Shore. 2 Spec.
Stat. 131. Beo, Karakelang-islands. Reef. 4 Spec.
Stat. 152. Wunoh-bay, Waigeu. Reef. 1 Spec.
Stat. 240. Banda. Reef. 2 Spec.
Stat. 250. Kilsuin, West coast of Kur-island. Reef. 1 Spec.
Stat. 299. Buka-bay, South coast of Rotti-island. Reef. 2 Spec.

The specimens of the majority of the localities have the animal brown; in those from Stat. 131 and 250 they are tinged in many parts with green, especially the specimen from Stat. 250 is very beautiful, the upper part of the foot, the muzzle, the tentacles, many of the epipodial fringes and the border of the mantle are green, the under surface of the foot and part of the epipodial fringes remain brown.

The shells are very variable in colour, markings, sculpture and even in shape, some specimens being more elongated and the spire is more or less flattened, even in specimens from the same locality.

3. *Haliotis coccoradiata* Reeve.

Reeve. Conch. Ic. Vol. XII, Haliotis, fig. 46.
Weinkauff Martini-Chemn. Conch. Cab. Ed. II, Haliotis, p. 60, Pl. 23, figs. 3, 4.
Pilsbry. Man. of Conch. Vol. XII, p. 118, Pl. 4, figs. 16, 20.

Stat. 115. Kwandang-bay, East-side of Pajunga-island. Reef. 1 Spec.
Stat. 255. Er-island, Kei-islands. 22 M. Coral. 1 Spec.

Both specimens are very young, the largest one being only 15 Mill. in length, the fullgrown ones reach, according to Pilsbry 42 Mill. in length, Weinkauff says even 45 Mill. Though the radiating folds in the specimen from Stat. 115 are more conspicuous than in the australian specimens I could compare, I cannot separate them, especially as the other specimen of scarcely 9 Mill. agrees very well with the upper whorls of the adult shells.

Hedley in his paper on: the effect of the Bassian isthmus upon the existing marine Fauna (Proc. Linn. Soc. New South Wales, 1903, p. 876), has mentioned this species as characteristic for his Peronian Fauna. As this paper has been written with the view to show the difference between the species of the eastern and western part of South Australia, rather than to trace the northern limits, it seems not to be excluded that this species should live in New Guinea, the Kei-islands etc.

4. *Haliotis (Padollus) ovina* Chemnitz.

Chemnitz. Conch. Cab. Ed. I, Vol. X, p. 315, Pl. 166, fig. 1609.
Reeve. Conch. Ic. Vol. XII, Haliotis, fig. 23.
Weinkauff. Martini-Chemn. Conch. Cab. Ed. II, p. 18, Pl. 6, fig. 11.
Pilsbry. Man. of Conch. Vol. XII, p. 124, Pl. 19, figs. 7, 8.

Stat. 133. Lirung, Salibabu-island. Reef. 1 Spec.

Of this beautiful species, one specimen of a deep coral-red, with scarce whitish spots, has been collected; according to Weinkauff it lives also in the Moluccos.

5. *Haliotis (Teinotus) asinina* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 780, sp. 652.
RUMPH. Amb. Rariteitkamer, p. 121, figs. E, F.
REEVE. Conch. Ic. Vol. XII, Haliotis, fig. 18.
WEINKAUFF. Martini-Chemn. Conch. Cab. Ed. II, Haliotis, p. 5, Pl. 1, fig. 5; Pl. 9, figs. 2, 3.
PILSBRY. Man. of Conch. Vol. XII, p. 126, Pl. 14, fig. 76.

Stat. 2. Madura-strait. 56 M. 1 Spec.
Stat. 58. Seba, Savu. Reef. 1 Spec.
Stat. 60. Haingsisi, Samau-island, Timor. Reef. 3 Spec.
Stat. 93. Pulu Sanguisiapo, Tawi-Tawi-islands, Sulu-Archipelago. 12 M. 6 Spec.
Stat. 301. Pepela-bay, East coast of Rotti. Reef. 1 Spec.
*Amboina. 2 shells with soft parts of 3 specimens.

Many of the specimens have the shell partly covered by the epipodial lobes, this may be the case in a more conspicuous manner in living specimens. The foot even in specimens in alcohol is considerably longer than the shell. In a specimen from Haingsisi, with a shell of 49 Mill., the foot is 72 Mill. in length, in another from Stat. 301, it is 69 Mill. with a shell of 57 Mill. The breadth of the foot in the first-mentioned specimen, is about 39 Mill. Corresponding to this more developed foot, the operculigerous lobe (as usually without operculum) is much more conspicuous, as well as the longitudinal furrow, characterizing the subgenus *Teinotus* by features taken from the soft parts.

Fam. STOMATELLIDAE A. Adams

Stomatella Lamarck.

1. *Stomatella papyracea* Chemnitz.

CHEMNITZ. Conch. Cab. Vol. V, p. 215, Pl. 182, figs. 1817, 1818.
REEVE. Conch. Ic. Vol. XIX, Stomatella, fig. 3.
PILSBRY. Man. of Conch. Vol. XII, p. 10, Pl. 52, figs. 46, 47; Pl. 51, fig. 9.

Stat. 37. Sailus Ketjil, Paternoster-islands. 27 M. Coral and coralsand. 1 Spec.
Stat. 43. Pulu Sarassa, Postillon-islands. 36 M. Coral. 2 Spec.

The soft parts agree in most respects with the description of PILSBRY (Proc. Ac. Nat. Sc. Philad. 1891, p. 71, 72) but both specimens have a long foot, which is pointed, not emarginate behind, this posterior part is not furrowed longitudinally as strongly as the anterior part, it is strongly keeled at the upper surface, with small fringes at the keel. The epipodial ridge bears 3 instead of 2 cirri, accompanied by fringed lobes, the third one is placed at the posterior part of the foot. I think however that this difference may result from the faculty, ascribed by A. ADAMS only to *Stomatia* and *Gena* (Proc. Zool. Soc. Lond. 1850, p. 29) "of spontaneously detaching a considerable portion of the hind part of the foot when disturbed or irritated", indeed the specimens show a groove, which, if one supposes the part behind it were lost, would give a shape corresponding to PILSBRY's figure. I see no operculum.

2. *Stomatella haliotoidea* Sowerby.

SOWERBY. Thes. Conch. Vol. II, p. 837, Pl. 174, figs. 10, 11.
REEVE. Conch. Ic. Vol. XIX, Stomatella, fig. 4.
PILSBRY. Man. of Conch. Vol. XII, p. 20, Pl. 52, figs. 40, 41.

Stat. 81. Pulu Sebangkatan, Borneo-bank. Reef. 1 Spec.
Stat. 176. Lilintah, South coast of Misool. Shore. 1 Spec.

The two specimens differ in colour of the shell, that from Stat. 176 being marked with dark brown flames on a yellowish-ground, the other is of a lighter hue, with a few white spots.

3. *Stomatella exquisita* Sowerby.

SOWERBY. Journ. of Malacology, Vol. X, 1903, p. 76, Pl. 5, fig 4.

Stat. 299. Buka- or Cyrus-bay, south coast of Rotti-island. Up to 36 M. Mud, coral and Lithothamnion. 1 Spec.

The only specimen of this beautiful species is still young, its diameter being scarcely $5^1/_2$ Mill.; it is however interesting, as SOWERBY did not know the locality of his specimen.

In this and in the preceding species the posterior part of the foot is wanting.

Stomatia Helbling.

1. *Stomatia phymotis* Helbling.

HELBLING. Abh. Privat-Gesellsch. Böhmen. Math. Vaterl. Gesch. u. Naturgesch. IV, p. 124.
REEVE. Conch. Ic. Vol. XIX, Stomatella, fig. 2.
PILSBRY. Man. of Conch. Vol. XII, p. 30, Pl. 54, figs. 16, 17.

Stat. 93. Pulu Sanguisiapo, Tawi-Tawi-islands, Sulu-Archipelago. 12 M. Lithothamnion-bottom, sand and coral. 1 Spec.

The specimen is very elongated and strongly scalar, more than in any of the cited figures.

2. *Stomatia acuminata* A. Adams.

A. ADAMS. Proc. Zool. Soc. Lond. 1850, p. 35.
REEVE. Conch. Ic. Vol. XIX, Stomatia, fig. 7.
PILSBRY. Man. of Conch. Vol. XII, p. 32, Pl. 54, fig. 18.

Stat. 93. Pulu Sanguisiapo, Tawi-Tawi-islands, Sulu-Archipelago. Reef. 2 Spec.
Stat. 109. Pulu Tongkil, Sulu-Archipelago. 13 M. Lithothamnion-bottom. 1 Spec.

The shells seem to be variable in colour; ADAMS calls it "reddish-brown", REEVE "brown", PILSBRY "rather brown"; the two specimens from Stat. 93 may perhaps be called reddish-brown, though I should rather say brownish-red. The shell from Stat. 109 is variegated with large white streaks, the sculpture however agrees with that of the more typical specimens. As one of the specimens from Stat. 93 contains the soft parts, the lighter hue cannot be ascribed to bleaching of the shells after death.

3. *Stomatia rubra* Lamarck.

LAMARCK. An. s. vert. Ed. Desh. Vol. IX, p. 16 (*Stomatella*).
REEVE. Conch. Ic. Vol. XIX, Stomatia, fig. 8.
PILSBRY. Man. of Conch. Vol. XII, p. 33; Pl. 51, figs. 26—28; Pl. 53, fig. 96; Pl. 54, figs. 31—33.

Stat. 98. 6° 9′ N., 120° 21′ E. 350 M. Sand. 1 Spec.
Stat. 99. North-Ubian. 16—23 M. Lithothamnion-bottom. 1 Spec.

The specimen from Stat. 98 is a young, dead shell of somewhat doubtful identification, its spire being more elevated than in any specimen I have seen; the great depth at which it has been collected, may be caused by the sinking down of the dead specimen. The other typical specimen from Stat. 99 contains the soft parts. The upper surface of the foot is tuberculate and spotted with black, and the tentacles are ringed by the same colour, on a yellowish-grey ground.

4. *Stomatia planulata* n. sp. Pl. VI, fig. 8.

Stat. 93. Pulu Sanguisiapo, Tawi-Tawi-islands, Sulu-Archipelago. Reef. 1 Spec.
Stat. 99. North-Ubian. 16—23 M. Lithothamnion-bottom. 1 Spec.

Shell much depressed, the spire only a trifle above the last whorl; colour variable; in both specimens a greenish-grey colour predominates, in the largest one, the top whorls are variegated with crimson and a large patch of the same colour occupies the upper part of the last whorl, near the aperture; the upper part is covered by microscopic spiral rows of darker arrowhead-shaped spots, the basal part is more yellowish. Number of whorls about $3^1/_2$, the last rapidly increasing; they are very convex, with a deep suture, and short subsutural folds. The sculpture consists of a keel at some distance from the suture, enclosing a concave zone, and another keel near the periphery; between these keels runs a row of elongated, slightly oblique tubercles, moreover the whole shell is covered with fine spiral striae and still finer growth-striae. Aperture very oblique, its upper margin concave near the body whorl, then strongly convex.

Alt. 3, diam. maj. $9^1/_2$, diam. min. $7^1/_2$; apert. alt. $3^1/_2$, oblique about $5^1/_2$ Mill.

The specimen from Stat. 99 is much younger, partly covered by a chalky deposit, it has an interrupted, spiral, crimson band at the periphery.

I know no species with which to compare the new one, the excavation of the upper part of both specimens, give it a very exceptional character, resembling a large *Planorbis*. Animal large, upper surface of foot granular and tuberculate, with three epipodial cirri, of which the third is placed on the detachable part of the foot.

Gena Gray.

1. *Gena planulata* Lamarck.

LAMARCK. An. s. Vert. Ed. Desh. Vol. IX, p. 17 (*Stomatella*).
RUMPH. Amb. Rariteitkamer, p. 121, Pl. 40, fig. I.
REEVE. Conch. Ic. Vol. XIX, Gena, fig. 3.
PILSBRY. Man. of Conch. Vol. XII, p. 38, Pl. 55, figs. 1, 23; Pl. 2, figs. 17—20.

Stat. 127. Taruna-bay, Great Sangir-island. Reef. 1 Spec.
Stat. 231. Amboina. Reef. 6 Spec.

This easily recognized species, distinct by its very flattened shape, its striated surface and large dimensions, should belong to the subgenus *Gena* s. str.. FISCHER (Manuel de Conchyliologie etc., Paris, 1887, p. 840) has proposed the new subgenus *Plomacotis* for *G. laevis* Pease and its allies, on account of the presence of epipodial cirri, which should be wanting in *G. planulata*, *nigra* and *lutea*, according to the researches of QUOY and GAIMARD, moreover *G. laevis* should possess a siphon on each side of the neck. Now in the specimens of the Siboga-expedition from Amboina, I see distinctly those siphons, though much shorter by the contraction in alcohol, and in one of them, I find on the right side, 3 epipodial cirri, accompanied by a lobed appendage and one distinct cirrus on the left side; in the other specimen the cirri are scarcely or not at all visible, and so former observers may have failed to perceive them. In most other respects the description of the soft parts agrees with that of *G. laevis*, for though I cannot detect that the tentacles and eye-stalks are hirsute, this may depend on contraction. One of the specimens from Amboina, and from Stat. 127 have lost their tails.

Though LAMARCK (l. c.) has cited the figure of RUMPH for *Stomatella auricula*, it is not doubtful that RUMPH has had in view *G. planulata*, his figure and short description, with the remark that they have scarcely a length of a phalanx of a finger, agrees only with this species, the more so, if one looks at the long fingers of that author on his portrait in the "Rariteitkamer".

2. *Gena nigra* Quoy & Gaimard.

QUOY & GAIMARD. Voy. de l'Astrolabe, III, p. 307, Pl. 66bis, figs. 10—12.
PILSBRY. Man. of Conch. Vol. XII, p. 38, Pl. 51, fig. 20, 21.

Stat. 301. Pepela-bay, East coast of Rotti-island. Reef. 1 Spec.

The only shell from the named locality agrees sufficiently with the description and figures, it is blackish with a few very small white dots.

Long. $16^3/_4$, lat. 8 Mill.

(See also Appendix).

3. *Gena lintricula* Adams.

A. ADAMS. Proc. Zool. Soc. Lond. 1850, p. 38.
REEVE. Conch. Ic. Vol. XIX, Gena, fig. 1.
PILSBRY. Man. of Conch. Vol. XII, p. 44, Pl. 55, fig. 14.

Stat. 144. North of Salomakië-(Damar)-island. 45 M. Coralbottom and Lithothamnion. 1 Spec.

The specimen differs from the original description in colour; the posterior part of the shell is nearly entirely yellowish-white with a green tinge, moreover a few smaller patches of the same colour are dispersed over the anterior part, a few dark spiral lines are more conspicuous on the posterior part. The surface is covered with very fine, close-set spiral and by more remote concentric striae. The species may be easily recognized by its very elongate shape.

4. *Gena auricula* Lamarck.

LAMARCK. An. s. vert. Ed. Desh. Vol. IX, p. 17 (*Stomatella*).
PILSBRY. Man. of Conch. Vol. XII, p. 44, Pl. 2, figs. 29—31; Pl. 55, figs. 8, 9 (*lutea*).
SMITH. Marine Mollusca. Fauna and Geography of the Maldive and Laccadive Archipelago, p. 618, N° 271.

Stat. 37. Sailus Ketjil, Paternoster-islands. 18 and 27 M. Coral and Coralsand. 3 Spec.
Stat. 58. Seba, Savu. Reef. 1 Spec.
Stat. 81. Pulu Sebangkatan, Borneo-bank. Reef. 1 Spec.
Stat. 89. Pulu Kaniungan Ketjil. Reef. 1 Spec.
Stat. 93. Pulu Sanguisiapo, Tawi-Tawi-islands. Reef and 12 M. 6 Spec.
Stat. 99. North-Ubian. 16—23 M. Lithothamnion-bottom. 1 Spec.
Stat. 133. Lirung; Salibabu-island. 36 M. Hard sand. 1 Spec.
Stat. 213. Pulu Pasi, Tanette. Reef. 2 Spec.
Stat. 213. South-island. Reef. 1 Spec.
Stat. 220. Saleyer. Reef. 1 Spec.
Stat. 234. Nalahia-bay, Nusa-laut-island. Reef. 1 Spec.
Stat. 240. Banda. 9—45 M. Lithothamnion-bottom. 12 Spec.
Stat. 282. Between Nusa Besi and the N.E. point of Timor. Reef and 27—54 M. 3 Spec.
Stat. 315. East of Sailus Besar, Paternoster-islands. Up to 36 M. Lithothamnion-bottom. 3 Spec.

The specimens vary much in colour, but agree in sculpture, consisting of fine spiral striae on the upper whorls and a few near the basal or left margin, and very fine radiating striae on the last whorl, being more conspicuous towards the right margin.

The colour varies from carmine to white and even blackish, with more or less numerous white spots and often darker, articulated, spiral bands. The upper whorls are commonly of another colour than the bodywhorl. The nomenclature is far from clear; LAMARCK cites RUMPH, Pl. 40, fig. I, as belonging to his *Stomatella auricula*, which is certainly erroneous; PILSBRY seems to have in view this species for his *G. lutea* Linn., though he agrees with HANLEY's opinion that *Patella lutea* of LINNÉ is unidentifiable, he believes that it is the *G. lutea* of ADAMS. I have followed the advice of Mr. E. A. SMITH, in accordance with the specimens of the British Museum.

In the animal the siphons and epipodial cirri are present, so it does not differ materially from *G. planulata*. Some specimens have lost their tails, even a few seem to have shed it off after being placed in alcohol, at least I found loose tails. The teeth of the radula agree in most respects with the description and figure of teeth of *G. lutea* by THIELE (TROSCHEL, Gebiss der Schnecken, Vol. II, p. 263, Pl. XXV, fig. 25) only the number of the smaller cusps of each tooth is slightly different, so I find only two denticles at the external or fifth lateral, instead of 3; this seems however to be of little importance for specific distinction.

5. *Gena ornata* A. Adams.

A. ADAMS. Proc. Zool. Soc. Lond. 1850, p. 39.
REEVE. Conch. Ic. Vol. XIX, Gena, fig. 9.
PILSBRY. Man. of Conch. Vol. XII, p. 45, Pl. 55, figs. 29, 30.

Stat. 282. Between Nusa Besi and the N.E. point of Timor. 27—54 M. Sand, coral and Lithothamnion. 3 Spec.

Agreeing in shape with the mentioned figures; two of the specimens seem to be young

and are nearly entirely rose-coloured, the nucleus and a few spots below the suture are white; in the largest specimen the last whorl is blackish with rose-coloured, spiral lines. The upper whorls are spirally striated, base with a few striae. Though this species has more the shape of a *Stomatella* than of *Gena*, the smooth, shining, last whorl agrees with its location in the genus *Gena*.

Miraconcha Bergh.

1. *Miraconcha obscura* Bergh.

(See Appendix).

Fam. Scissurellidae.

Scissurella Orbigny.

1. *Scissurella maxima* n. sp. Pl. VI, fig. 9.

Stat. 178. 2°40′ S., 128°37′.5 E. 835 M. Blue mud. 2 Spec.

Shell large, thin, depressed, yellowish-white; whorls about $4^1/_2$, convex above, concave towards the slit, rapidly increasing; nucleus smooth, sculpture consisting of numerous fine, curved, radiating ribs, interrupted on the lower whorls by the slit-fasciole, these ribs are crossed by spiral lirae of which there are about 10 on the upper surface, besides a few secondary ones, they form small square beads when they cross each other; the sculpture of the base is similar, with the ribs more crowded towards the aperture; slit long, peripheral, rather wide, deep, with upturned edges, striated by arched, lamellose striae. Umbilicus partly covered by the columellar margin. Aperture rounded, very oblique, angular at the insertion on the body-whorl and at the periphery, outer and basal margin rounded, thin, columellar margin slightly concave, a little reflected at the upper part, stronger so below, where it joins the basal margin; on the body whorl the margins are connected by a thin layer of enamel.

Alt. $4^1/_2$, diam. maj. $6^1/_2$; apert. alt. 3, lat. 3 Mill.

This species may be distinguished by its shell, which is large for the genus, in shape but not in sculpture, it resembles *Sc. umbilicata* Jeffr.

2. *Scissurella exquisita* n. sp. Pl. VI, fig. 10.

Stat. 95. 5°43′.5 N., 119°40′ E. 522 M. Stony bottom. 1 Spec.

Shell rather large, very thin, transparent, white, depressed, whorls about $3^1/_2$, convex above, concave towards the slit, rapidly increasing; nucleus rather smooth, sculpture of the upper whorl consisting of very numerous, radiating, elevated striae, which are curved and crossed from about halfway the penultimate whorl by weaker spiral ones, about 15 on the upper part of last whorl, sculpture of the base similar, slit-fasciole a little above the sutures, rather wide, with upturned edges, striated across by arched striae, slit $3^1/_2$ Mill. Umbilicus narrow, partly covered

by the columellar margin. Aperture rounded, moderately oblique, angular at the upper and peripheral part, margins curved, the columellar one slightly concave, a little reflected, especially at the upper part. Margins connected on the parietal wall, by a thin layer of enamel.

Alt. $2^3/_4$, diam. maj. $3^1/_2$; apert. alt. 2, lat. 2 Mill.

The species resembles in shape the preceding one, but is much smaller, with more delicate sculpture. It is allied to *Sc. aetheria* Melv. & Standen, but is much larger and the slit-fasciole runs at some distance above the suture, which seems not to be the case in *Sc. aetheria* (Ann. and Mag. of Nat. Hist. Ser. 7, Vol. XII, p. 300, Pl. 21, fig. 6).

Fam. Fissurellidae Risso.

Fissurella Bruguière.

1. *Fissurella (Cremides) sibogae* n. sp. Pl. VI, fig. 12.

Stat. 88. 0° 34'.6 N., 119° 8'.5 E. 1301 M. Fine grey mud. 1 Spec.

Shell depressed-conical, oval, with slightly convex sides, orifice in front of the middle. Sculpture consisting of numerous, unequal, radiating riblets, about 100 in number, besides a few intermediate ones, and rather numerous concentric lirae, making the riblets slightly nodose, moreover with close-set growth-striae, outer surface whitish. The orifice is not quite intact, rounded-oblong. Inside whitish, muscular impression very indistinct, border of the orifice greyish, without distinct callus. Margin rather acute, indistinctly crenulated, slightly raised at the sides.

Long. 17, lat. 13, alt. 6; length of front slope $5^1/_2$, orifice $2^1/_2$, post. slope 9 Mill.

The only specimen is a dead shell, the margins of the base and of the orifice are slightly injured, I have located it with doubt in the subgenus *Cremides*, as I know no species without hole-callus. May it have been lost? If normal, this species might form a new group. In sculpture it is very peculiar and calls in mind several species of *Glyphis*, but the interior has no traces of a truncated callus.

Macroschisma Swainson.

1. *Macroschisma maxima* A. Adams.

Adams. Proc. Zool. Soc. Lond. 1850, p. 202.
Pilsbry. Man. of Conch. Vol. XII, p. 192, Pl. 62, fig. 22.
—— Cat. Marine Mollusks Japan, p. 106 (*M. macroschisma* Chemn.).

Stat. 240. Banda. 9—45 M. Lithothamnion-bottom. 2 Spec.
Stat. ? 1 Spec.
Stat. 282. Between Nusa Besi and N.E. point of Timor. 27—54 M. Lithothamnion-bottom. 1 Spec.

I owe to Mr. E. A. Smith the identification of this species; the specimens from Banda are red with white rays at the sides; the specimens are considerably smaller than the figure of Pilsbry, which is a copy of the original figure given by Adams (Genera of recent Moll. III,

pl. 51, fig. 5) the largest specimen has a shell of 10 Mill. in length, against 21 Mill. in the figure of PILSBRY, the foramen is not so abruptly dilated posteriorly, but this may perhaps depend on age, as this character is still less conspicuous in the smallest specimen from the same locality and in those from Stat. ? and 282, which are rather doubtful, being very small.

var. *elongata* n. var. Pl. VII, fig. 1.

Stat. 313. East of Dangar Besar, Saleh-bay. Up to 36 M. Sand, coral and mud. 1 Spec.

Shell more elongated, grey with darker markings, sculpture in the front part of shell more regular.

Length of shell 14, breadth 6 Mill.

Distinguished from the type by its length, which is nearly $2^1/_2$ times the breadth, in the figure of ADAMS, it is only about 2 times as long as broad, the colour agrees with ADAM's description. The animal is dark grey, white at the sides, darker on the back, the anal tube black, the head light grey, with the tentacles and border of muffle white, foot yellowish.

Glyphis Carpenter.

1. *Glyphis subcalyculata* n. sp. Pl. VII, fig. 2.

Stat. 310. 8° 30′ S., 119° 7′.5 E. 73 M. Sand with few pieces of dead coral. 1 Spec.

Shell ovate, elevated, conical, with concave slopes, especially the posterior one, yellowish with a green tinge in some parts, especially on the posterior slope, and a few scattered, short, purple-brown streaks; the sculpture consists of eleven prominent, radiating ribs, of which those on the posterior slope are strongest, the interspaces on the front-side each with 3 riblets, of which the middle one is the strongest; on the sides and posterior slope they amount to seven, of which the fourth is stronger than the others, the second and sixth are thinner, the first, third, fifth and seventh are the thinnest. The ribs are crossed by very fine growth-striae and by about 20 concentric lirae, forming rather conspicuous scales on the radiating ribs, the strongest on the posterior 3 ribs. Foramen inclined towards the front, keyhole-shaped, rounded in front, enlarged behind, with 2 inconspicuous denticles at each side. Base oval, margin crenulated and angular, especially at the ends of the 3 posterior ribs; interior white, with grooves corresponding to the principal ribs; hole-callus thick, truncated behind, with a rather deep pit behind the truncature.

Long. 20, lat. 13, alt. 9, length of front slope $6^1/_2$, of posterior one $11^1/_2$, of perforation 2 Mill.

This new species is allied to *G. calyculata* Sow., but differs by the concave posterior slope, which is convex in *G. calyculata*, by the elongated keyhole-shaped perforation, by the smaller number of prominent ribs, which are much differentiated, especially on the front part, by the colour, which is yellowish instead of pink, by the strong hole-callus, with shallower pit behind.

I have used the generic name *Glyphis* though PILSBRY has shown (Nautilus, Vol. V, p. 104) that it ought to be *Fissuridea* Swains. As he has however applied this name to another group in his Manual of Conchology, and many authors have afterwards used the name *Glyphis*,

I follow their example, in order to avoid confusion, which will doubtless result by using the same name for different but nearly allied animals.

2. *Glyphis Sieboldii* Reeve.

REEVE. Conch. Ic. Vol. VI, Fissurella, fig. 102.
PILSBRY. Man. of Conch. Vol. XII, p. 204, Pl. 38, fig. 58, 59.

Stat. 240. Banda. 9—45 M. Lithothamnion-bottom. 1 Spec.
Stat. 282. Between Nusa Besi and N.E. point of Timor. 27—54 M. Sand, coral and Lithothamnion. 4 Spec.

Three of the specimens from Stat. 282 are very small and not characteristic, however they agree sufficiently with the upper part of larger specimens.

3. *Glyphis Reevei* nom. nov.

= *Fissurella excelsa* Reeve. Conch. Ic. Vol. VI, fig. 113 (not ADAMS and REEVE).

Stat. 51. Madura-bay and other localities in the southern part of Molo-strait. 69—91 M. Fine grey sand; coarse sand with shells and stones. 1 Spec.
Stat. 60. Haingsisi. 36 M. 1 Spec.
Stat. 71. Makassar and surroundings. Up to 32 M. Mud, sand with mud. 1 Spec.
Stat. 116. West of Kwandang-bay-entrance. 72 M. Fine sand with mud. 1 Spec.
Stat. 162. West-coast of Salawatti. 18 M. Coarse and fine sand with clay and shells. 1 Spec.
Stat. 164. 1°42′.5 S., 130°47′.5 E. 32 M. Sand, small stones and shells. 1 Spec.

In the year 1848, ADAMS and REEVE (Zool. "Samarang", Moll. p. 70, Pl. 11, fig. 5) have described a different species under the name *excelsa*. The plate of REEVE's Conch. Ic. being of 1850, his species must have a new name.

As the figures of REEVE and PILSBRY (Man. of Conch. Vol. XII, pl. 39, fig. 96) represent the species only from the back-view and they give no measurements, I give those of the largest specimen, from Stat. 71.

Long. $14^1/_2$, lat. 9, alt. 9 Mill.

PILSBRY (l. c. p. 209) suggests that *Fissurella excelsa* Reeve should be a synonym of *Glyphis alta* C. B. Adams from Panama, though REEVE says: "Eastern seas", but though the figure of PILSBRY, agrees in many respects with the Siboga specimens, I think it is not probable that they belong to the same species, since the latter specimens justify REEVE's locality.

4. *Glyphis ticaonica* Reeve.

REEVE. Conch. Ic. Vol. VI, Fissurella, fig. 107.
PILSBRY. Man. of Conch. Vol. XII, p. 225, Pl. 36, fig. 20.

Stat. 98. 6°9′ N., 120°21′ E. 350 M. Sand. 2 Spec.
Stat. 144. North of Damar-island. 45 M. Coral bottom and Lithothamnion. 1 Spec.
Stat. 258. Tual-anchorage, Kei-islands. 22 M. Lithothamnion, sand and coral. 1 Spec.

The shells from Stat. 98 are dead; it is not without doubt that I have identified them, but they agree rather well with those from the other localities, and may have lived at similar depth.

5. *Glyphis nigriradiata* Reeve.

REEVE. Conch. Ic. Vol. VI, Fissurella, fig. 81.

Stat. 258. Tual-anchorage, Kei-islands. 22 M. Lithothamnion, sand and coral. 1 Spec.

Agreeing exactly with the figure and description of REEVE, except that the interrupted character of the black rays is not conspicuous. PILSBRY thinks it may be the young of *G. Rüppellii* Sow. (Man. of Conch. Vol. XII, p. 217) but this suggestion seems to be erroneous, as the orifice in the present species is rounded-oval, in accordance with REEVE's figure, whereas in *Rüppellii* it is "squarish-oblong".

6. *Glyphis* sp.

Stat. 98. 6° 9′ N., 120° 21′ E. 350 M. Sand. 1 Spec.

A dead, much worn shell, too bad for identification or description, belongs to the genus *Glyphis* and is certainly distinct from the preceding species.

7. *Glyphis corbicula* Sowerby?

SOWERBY. Thes. Conch. Fissurella, p. 200, fig. 180.
PILSBRY. Man. of Conch. Vol. XII, p. 220, Pl. 61, fig. 20.

Stat. 115. East side of Pajunga-island, Kwandang-bay. Reef. 1 Spec.
Stat. 116. West of Kwandang-bay-entrance. 72 M. Fine sand with mud. 1 Spec.
Stat. 152. Wunoh-bay, N.W. coast of Waigeu-island. Reef. Lithothamnion-bottom. 1 Spec.
Stat. 258. Tual-anchorage, Kei-islands. 22 M. Lithothamnion, sand and coral. 1 Spec.

The specimens are small, probably young, and are very nearly allied to *G. corbicula*, the slight differences may perhaps depend on age or on variability. The description in SOWERBY's Thesaurus, copied by PILSBRY, is very short and insufficient. The specimens under consideration resemble also *G. Townsendi* Melv. (Mem. and Proc. of the Manchester Lit. and Phil. Society, Vol. 41, p. 20, Pl. 7, figs. 27, 27*a*) but the shape of the shell and the position of the orifice agree better with the figures of *G. corbicula*.

Puncturella Lowe.

1. *Puncturella gemmata* n. sp. Pl. VII, fig. 3.

Stat. 280. 8° 17′.4 S., 127° 30′.7 E. 1224 M. 1 Spec.

Shell elevated, conical, with oval base and curved apex. Front slope convex, posterior slope concave, side slopes convex below, concave towards the apex, which is slightly bent towards the left and shows scarcely one spiral whorl on the right side. Colour yellowish. Sculpture consisting of numerous, radiating riblets, which are alternately stronger, the intermediate weaker ones don't reach the summit but end at about $^2/_3$ of the height, they are surmounted by rounded-triangular or pear-shaped beads, the interstices are rather irregularly concentrically wrinkled; orifice oval, lying just before the apex, slightly narrower above, its length is about 1 Mill., its breadth a little more than $^1/_2$. Interior white, smooth; septum large, nearly straight, only slightly curved,

directed towards the front-side, apparently slightly incised in the centre (this is not certain, the margin not being quite intact); a thin slitcallus seems to exist.

Long. 6, lat. 5, alt. $3^1/_2$ Mill.

This interesting species will be easily distinguished by its beaded sculpture, I find in litterature only *P. agger* Wats. (Challenger Gastrop. p. 40, Pl. 4, fig. 6) which has a similar, but still different sculpture, and may be distinguished by its shape, slit, septum, etc.

1. *Puncturella (Cranopsis) gigantea* n. sp. Pl. VII, fig. 4.

Stat. 122. 1° 58'.5 N., 125° 0'.5 E. 1165—1264 M. Stone. 1 Spec.

Shell depressed, conical, base oval, apex curved. Front slope convex, posterior and lateral slopes concave, the apex shows about one volution at its right side, placed at nearly $^2/_3$ of the total length. Sculpture consisting of close-set, radiating riblets, which are alternately stronger and are crossed by concentric ridges, which make the riblets crenulated, the weaker riblets come near to, but don't reach the summit. Slit-fasciole rather deep, long about 7 Mill. crossed by thin lamellae, orifice about 4 Mill. in length, perhaps largest above (or slightly broken) ending in a blunt point, at $7^3/_4$ Mill. from the front margin. Interior white, with shallow, radiating grooves, corresponding to the exterior riblets, and making the thin margin crenulated; from the summit runs the septum, closing the upper part of the slit-fasciole, thickened at the sides of the fasciole and along the orifice, below this follows a rather strong, interior rib.

Long 29, lat. $22^1/_2$, alt. $12^1/_2$ Mill.

Allied to *P. (Cranopsis) aethiopica* v. Martens (Die beschalten Gastropoden der deutschen Tiefsee-Exp. 1898—99, p. 128, Pl. 5, fig. 9) but much larger, more elongated, with (according to the figure) much finer sculpture, the apex more terminal; the slit is more regular and symmetrical, I think however this last character has not much value, as it may be individual, like v. Martens suggested.

Rimula Defrance.

1. *Rimula carinifera* n. sp. Pl. VII, fig. 5.

Stat. 105. 6° 8' N., 121° 19' E. 275 M. Coralbottom. 1 Spec.

Shell depressed, conical, with curved apex, base oval. Front slope very convex, side slopes moderately convex, posterior slope slightly concave, apex with about one volution, visible at the right side; it is placed at about $^9/_{11}$ of the total length. Colour white. Sculpture consisting of rather strong radiating ribs and a few intermediate ones, and weaker concentric ridges, making the ribs crenulated and leaving in the interstices subquadrate pits. Perforation oblong, oval, long $^3/_4$, broad $^1/_3$ Mill. Slit-fasciole just above the perforation shallow, higher up the shell prominent, so as to make it carinated; the fasciole crossed by rather thin, slightly curved lamellae, which towards the perforation are transformed in scales. Interior white, smooth, but having the appearance, by the transparency of the shell, of being grooved; margin crenulated, slightly elevated at the sides, apex deeply pitted.

Long. $5^1/_2$, lat. $3^1/_2$, alt. $2^1/_4$ Mill.

Closely allied to *R. carinata* A. Ads. (Proc. Zool. Soc. Lond. 1851, p. 226) but more coarsely sculptured, the number of radiating ribs being only about 34 and a few intermediate ones; ADAMS says: "ornamented with very many simple, close radiating riblets; interstices cancellated"; in the species now under consideration; the ribs are not simple but conspicuously crenulated, the concentric lirae crossing the ribs.

Emarginula Lamarck.

1. *Emarginula variegata* A. Adams.

A. ADAMS. Proc. Zool. Soc. Lond. 1851, p. 84.
REEVE. Conch. Ic. Vol. XIX, Emarginula, fig. 22.
PILSBRY. Man. of Conch. Vol. XII, p. 263, Pl. 28, fig. 12.

Stat. 61. Lamakera, Solor. Reef. 1 Spec.
Stat. 86. Dongala, Palos-bay, Celebes. Shore. 1 Spec.
Stat. 127. Taruna-bay, Great Sangir-island. Reef. 1 Spec.
Stat. 296. Noimini, South coast of Timor. Reef. 1 Spec.

According to the figures and collected specimens, this species seems to be rather variable in colour; the specimen from Stat. 296 is nearly entirely yellowish-white, with a few rays and spots, those from the other localities are much darker; however they agree sufficiently in sculpture, to consider them as one and the same species.

2. *Emarginula paucipunctata* n. sp. Pl. VII, fig. 6.

Stat. 213. Saleyer. Reef. 1 Spec.

Shell elongated-oval, obtuse in front, slightly depressed. Front slope very convex, side slopes and posterior one less so, the latter concave just below the slightly eroded apex, which is placed at about $^2/_3$ of the total length. Colour white, with a few black spots on some of the ribs, but no more than 3 on one rib; one of these spotted ribs on the front slope and 3 or 4 on each side. Sculpture consisting of 15 strong radiating ribs, with a thinner rib in each interstice, and often with still fainter ones in the intervals; they are crossed by about 10 conspicuous, concentric lirae, making the ribs crenulated, and numerous striae. Slit-fasciole shallow, with numerous curved lamellae. Margin crenulated, angular in front, length of slit $1^1/_2$ Mill. with thickened margins and a short, flat rib towards the apex. Interior smooth, white, space within the muscle-scar yellowish-brown, the ribs and black spots are visible through the shell.

Long. $5^3/_4$, lat. $3^3/_4$, alt. $2^1/_4$ Mill.

I know no species to which this is allied. *E. punctata*, which agrees perhaps in some respects, is much more rounded. The small black spots give a very peculiar aspect to this species.

3. *Emarginula multisquamosa* n. sp. Pl. VII, fig. 7.

Stat. 131. Beo, Karakelang-islands. Reef. 1 Spec.

Shell elongated-oval, depressed. Front slope long, convex, side slopes slightly convex,

posterior slope concave. Apex compressed, with one whorl at the right side, placed at about $^4/_5$ of the total length. Colour yellowish-white; sculpture consisting of about 44 radiating ribs, and a few intermediate ones at irregular intervals, and one or two very fine, radiating threads in each interstice, the whole shell is crossed by fine concentric ridges, forming on the ribs conspicuous compressed scales. Slit-fasciole rather large, elevated, forming a strong rib or keel on the front slope, with close-set, strong, curved lamellae. Margin crenulated by the ribs, raised at the sides, the shell resting on its ends; slit long $2^3/_4$, broad $^3/_5$ Mill., its margin slightly thickened, a strong groove runs towards the deeply pitted apex. Interior white, smooth, apparently cancellated, in consequence of the transparency of the shell.

Long. $9^1/_2$, lat. $6^1/_2$, alt. 3 Mill.

Resembling in shape *Emarginula harmilensis* Sturany (Exp. S. M. Schiff "Pola" in das Rothe Meer, Gastropoden, p. 27 (235) pl. V, fig. 12) but differing in colour, that species being variegated by spots, lines and points of a brownish to greenish colour, the apex is placed still nearer to the posterior end, and the ribs are not scaled, but only beaded.

4. *Emarginula curvata* n. sp. Pl. VII, fig. 8.

Stat. 95. 5°43′.5 N., 119°40′ E. 522 M. Stony bottom. 1 Spec.
Stat. 105. 6°8′ N., 121°19′ E. 275 M. Coralbottom. 1 Spec.
Stat. 164. 1°42′.5 S., 130°47′.5 E. 32 M. Sand, small stones and shells. 1 Spec.

Shell very elongated, oval, capuliform, front slope very convex, side slopes moderately convex, posterior slope very short, nearly straight, excavated below the apex, which if seen from above, surpasses the posterior margin. Colour white (brownish in two small specimens). Sculpture consisting of about 46 rather strong, radiating ribs, a weaker one in most of the interstices and very fine intermediate ones; they are crossed by comparatively strong, concentric ridges, forming short, solid scales on the ribs. Slit-fasciole moderately large and deep, crossed by close-set lamellae. Margin conspicuously crenulated by the ribs, raised at the sides, slit long 4, large nearly $^1/_2$ Mill., its margin thickened interiorly, a large, depressed rib runs towards the deeply pitted apex. Interior smooth, white, the external sculpture visible through the shell.

Length of base $9^3/_4$, of shell with apex $10^1/_2$, lat. $6^1/_2$, alt. $5^1/_2$ Mill.

Allied to *E. galericulata* Ads. (Proc. Zool. Soc. 1851, p. 84) but according to the figures of Reeve (Conch. Ic. Emarginula sp. 15) and of Pilsbry (Man. of Conch. Vol. XII, pl. 28, fig. 20) which is a copy of the original figure in the Thesaurus Conchyliorum, this species is much larger, the apex is more curved and its distance from the basal margin is consequently smaller; the rather short description gives no conspicuous differences, the character of Adams: "front rib granulate-punctate above the slit" however, does not correspond to the specimens. I think the specimens from Stat. 105 and 164 may be young ones of this species, though their colour is brownish, as I can detect no difference in sculpture or shape of any importance, which may not depend on age. If however more materials proved these differences to be constant, they will form two species.

5. *Emarginula sublaevis* n. sp. Pl. VII, fig. 9.

Stat. 280. 8° 17'.4 S., 127° 30'.7 E. 1224 M. Probably hard bottom. 1 Spec.

Shell oval, moderately depressed, front and side slopes convex, posterior slope concave in the upper part, slightly convex below. Colour yellowish-white, with a row of small, brown spots at each side of the slit and fasciole. Apex placed posteriorly, at about $^{11}/_{13}$ of the total length, with a whorl on the right side. Sculpture consisting of rather numerous, thin, radiating riblets, about 33 on each side, which are alternately stronger, with broader interstices, with commonly 3 smaller intermediate riblets. This radiating sculpture is crossed by numerous concentric ridges, giving to the shell the appearance of being covered by elongate granules. Slit-fasciole narrow, laying deep, by the strongly elevated margins, sculptured by rather remote arched lamellae and intermediate striae. Slit long about 3, large nearly $^1/_2$ Mill., its margin thickened interiorly, a rather shallow groove, deep near the slit, with a rather strong rib at each side, runs towards the apex. Interior slightly grooved, white in the centre, yellowish towards the slightly crenulated margin, which is a little raised at the sides.

Long. 13, lat. $9^1/_2$, alt. 7 Mill.

I know no species to which this one is closely allied, its weak though very beautiful sculpture is very peculiar.

6. *Emarginula dubia* n. sp. Pl. VII, fig. 10.

Stat. 95. 5° 43'.5 N., 119° 40' E. 522 M. Stony bottom. 1 Spec.

Shell oval, sub-depressed, yellowish-white, front slope very, side slopes slightly convex, posterior slope slightly concave, much so below the apex, which is placed at about $^6/_7$ of the total length, and has a whorl on the right side. Sculpture consisting of numerous radiating riblets about 116 in number, with a smaller one in the majority of the interstices; they are crossed by thin concentric ridges, forming beads on the riblets. Slit-fasciole rather deep, with numerous lamellae crossing it. Slit long 2, large $^1/_3$ Mill., its margins thickened interiorly, a flattened rib runs towards the apex. Interior smooth, yellowish, margin crenulated, with slightly raised sides.

Long. 7, lat. $5^1/_2$, alt. $3^1/_2$ Mill.

Resembling the figure of *E. bellula* Adams, in PILSBRY's monograph (Man. of Conch. Vol. XII, Pl. 28, fig. 37) but the apex is placed more central, the slit-fasciole is not punctured etc. I am however not quite certain, that this species of simple characters has not been described, but have failed, even with the assistance of Mr. E. A. SMITH, to identify it with any known species.

7. *Emarginula foveolata* n. sp. Pl. VII, fig. 11.

Stat. 105. 6° 8' N., 121° 19' E. 275 M. Coralbottom. 1 Spec.

Shell oval, broader behind, conical, colour grey (probably not the natural colour), front slope strongly, side slopes slightly convex, posterior slope concave, apex curved, placed at about $^2/_3$ of the total length, the apex being slightly worn, no whorl is visible. Sculpture consisting

of numerous radiating ribs, about 22 at each side, with an intermediate one in the interstices at the sides, and a few at irregular intervals, they are crossed by weaker concentric ridges, which form small beads on the ribs, and leave deep pits in the interstices. Slit-fasciole rather large and deep, with conspicuous arched lamellae; slit long $2^1/_2$, large nearly 1 Mill. at the base, its margin is thickened, a flat, broad, slightly grooved rib runs towards the apex, interior smooth, margin crenulated, with slightly raised sides.

Long. $14^1/_2$, lat. $11^1/_2$, alt. $7^1/_2$ Mill.

The only specimen is slightly worn, and I think the grey colour must depend on its long abode in mud. It is allied to *E. puncticulata* Ads. (Proc. Zool. Soc. Lond. 1851, p. 84) which is still larger and differs in sculpture, that species has according to the description, only 28 ribs, with 3 small riblets in the interstices and in the figures the shell is much less pitted.

8. *Emarginula scabricostata* A. Adams.

A. Adams. Proc. Zool. Soc. Lond. 1851, p. 85.
Reeve. Conch. Ic. Vol. XIX, Emarginula, fig. 54.
Pilsbry. Man. of Conch. Vol. XII, p. 268, Pl. 28, fig. 24.

Stat. 282. Between Nusa Besi and the N.E. point of Timor. Reef. 1 Spec.

The figures of Reeve and of Pilsbry, which is a copy of that in Sowerby's Thesaurus Conch. don't show the radiating buff bands, nor can I detect them in the Siboga-specimen, but the scabrous ribs are very characteristic.

9. *Emarginula (Emarginella) clypeus* A. Adams. Pl. VII, fig. 12.

A. Adams. Proc. Zool. Soc. Lond. 1851, p. 83.
Reeve. Conch. Ic. Vol. XIX, Emarginula, fig. 21.
Pilsbry. Man. of Conch. Vol. XII, p. 265, Pl. 28, fig. 7.

Stat. 50. Bay of Badjo, West coast of Flores. Up to 40 M. Sand. 1 Spec.

This species proves to belong to the subgenus *Emarginella*, founded by Pilsbry (l. c.) for *E. Cuvieri* Audouin, on account of the voluminous animal, which partly envelops the shell. This is also the case with *E. clypeus*. The animal has a dark coral-red foot, the tentacles, under surface of the mantle, and the epipodial papillae are of the same colour, the muzzle as far as visible is much darker, and the upper surface of the mantle, which covers the margin of the shell, is dark flesh-colour, strongly pigmented with black, so as to give to the upper surface a brown appearance. According to the figure given by Pilsbry (l. c. pl. 64, fig. 32) the sculpture of the shell differs in being closely ribbed, whereas in *E. Cuvieri* the ribs seem to be more spaced.

10. *Emarginula (Emarginella) sibogae* n. sp. Pl. VIII, fig. 1.

Stat. 49[a]. Sapeh-strait. 69 M. Coral and shells. 1 Spec.
Stat. 133. Lirung, Salibabu-island. 36 M. Hard sand. 2 Spec.
Stat. 305. Mid-Channel of Solor-strait, Kampong Menanga. 113 M. Stony. 1 Spec.
Stat. 315. East of Sailus Besar, Paternoster-islands. Up to 36 M. Lithothamnion-bottom. 1 Spec.

Shell oval, broader behind, much depressed, front slope convex, the other slopes convex above, but concave towards the margin, which is still more depressed. Colour white. Apex placed at about $^{7}/_{11}$ of the total length, slightly curved, without distinct whorl. Sculpture consisting of about 56 radiating ribs, some of which are thinner; they are crossed by numerous, thin, rather close-set, concentric ridges, which are straight in the interstices, arched on the ribs, forming short scales. Slit-fasciole large, very deep, crossed by numerous, thin, arched lamellae, slit large, length about $2^{3}/_{4}$, breadth 1 Mill. Margin thick, crenulated by the ribs, its sides slightly raised. Interior smooth, white, bluish towards the centre; margins of the slit much thickened, with a very short rib, running in the direction of the apex.

Long. 11, lat. 8, alt. 3 Mill.

The animal is yellowish-white, it has rather long tentacles and about 12 epipodial filaments on each side.

This species is allied to the preceding one, but may be at once distinguished by the colour of the animal, the shell is less elongated than in *E. clypeus*, the apex is more elevated and recurved, the slit is larger and longer, the sculpture seems to be coarser. I have not seen a loose shell of *E. clypeus*.

Subemarginula Blainville.

1. *Subemarginula tricarinata* Born.

BORN. Test. Mus. Caes. Vindob. p. 423, Pl. 18, fig. 6.
REEVE. Conch. Ic. Vol. XIX, Emarginula, fig. 43 (*panhiensis*).
PILSBRY. Man. of Conch. Vol. XII, p. 276, Pl. 29, figs. 7, 8, 9.

Stat. 37. Sailus Ketjil, Paternoster-islands. Up to 18 M. Coralsand. 1 Spec.
Stat. 144. North of Salomakiëe-(Damar)-island. 45 M. Lithothamnion-bottom. 2 Spec.
Stat. 301. Pepela-bay, East coast of Rotti-island. Reef. 1 Spec.

The specimens are young, that from Stat. 37 has dark rays, especially visible in the interior, though I have not seen this character, amongst the numerous specimens I have compared, I think it may be individual. The sculpture agrees with typical specimens.

2. *Subemarginula plana* n. sp. Pl. VIII, fig. 2.

Stat. 282. Between Nusa Besi and the N.E. point of Timor. Reef and 27—45 M. 3 Spec.

Shell oblong, oval, much depressed, apex placed at about $^{3}/_{4}$ of the length. Front slope convex, side slopes moderately, posterior slope very concave. Colour white, eventually with short brown lines at the margin, more conspicuous at the interior. Sculpture consisting of rather numerous radiating ribs, the front rib very strong and two conspicuous but less strong ones at some distance on each side, the total number of ribs is about 25, in most cases with small intermediate ribs; they are crossed by numerous fine growth-striae and concentric ridges, making them slightly crenulated. Margin thin, strongly crenulated by the ends of the ribs. Interior white, with a very distinct mushroom-like figure inside the silvery muscle-scar, deeply pitted at the apex,

front groove conspicuous, ending at a short distance from the apex; notch conspicuous but not deep, subquadrate. Sides of the shell slightly raised and even a little turned up.

Long. $11^1/_2$, lat. $7^3/_4$, alt. $2^1/_2$ Mill.

This species has a slight resemblance with the upper view of *S. imbricata* A. Ads., as figured by PILSBRY (Man. of Conch. Vol. XII, Pl. 29, figs. 14, 15), but the apex is placed much more towards the posterior end, it differs also in colour and in many other particulars. As usually with the species of ADAMS, no measurements are given, even no mention has been made of the relative altitude of the shell.

3. *Subemarginula dubia* n. sp. Pl. VIII, fig. 3.

Stat. 126. 3° 27'.1 N., 125° 18'.7 E. 2053 M. Hard bottom. 1 Spec.

Shell small, conical, compressed, oval, apex worn, placed slightly posteriorly, front and posterior slopes slightly convex, side slopes straight. Colour white, covered by a brown epidermis. Sculpture consisting of about 18 strong, radiating ribs and numerous intermediate riblets and striae; ribs crenulated. Margin thin crenulated by the ends of the ribs. The front rib is stronger, with a point at the margin. Interior smooth, white, with a conspicuous groove, corresponding to the front rib. Muscle-scar only slightly hooked inward.

Long. $4^1/_2$, lat. $2^1/_5$, alt. $1^1/_2$ Mill.

This species has much puzzled me, as the small animal was too much contracted to allow a sufficient study of it. As the apex is placed posteriorly, it is no *Patella* or *Acmaea*; it might perhaps belong to *Phenacolepas* or to a new genus, but the internal groove on the front side has induced me, to describe it provisionally as a *Subemarginula*.

Scutus Montfort.

1. *Scutus unguis* Linné.

LINNÉ. Mus. Ulricae, p. 69 (*Patella*).
REEVE. Conch. Ic. Vol. XVII, Scutus, fig. 7 (*corrugatus*).
PILSBRY. Man. of Conch. Vol. XII, p. 291, Pl. 40, figs. 4—8.

Stat. 248. Ruma Lusi, N. point of Tiur-island. 36 M. 1 Spec.
Stat. 250. Kilsuin, West coast of Kur-island. Reef. 1 Spec.

The specimen from the last-named locality is nearly covered by the mantle of the animal. For the anatomy and other localities, see Appendix by Prof. BERGH, for a figure of the living animal Pl. III, fig. 20 of monograph L of this work (R. BERGH, Die Opisthobranchia der Siboga-Expedition).

Section Docoglossa Troschel.

Fam. Acmaeidae Carpenter.

Acmaea Eschscholtz.

1. *Acmaea striata* Quoy & Gaimard, var. *borneensis* Reeve.

Reeve. Conch. Ic. Vol. VIII, Patella, fig. 113.
Pilsbry. Man. of Conch. Vol. XIII, p. 48, Pl. 35, fig. 25—29.

Stat. 50. Bay of Badjo, West coast of Flores. Up to 40 M. Sand. 1 Spec.
Stat. 51. Madura-bay. Shore. 1 Spec.
Stat. 115. Kwandang-bay, East side of Pajunga-islands. Reef. 3 Spec.
Stat. 127. Taruna-bay, Great Sangir-island. Reef. 2 Spec.
Stat. 165. N. E. side of Daram-island, East coast of Misool. Reef. 1 Spec.

The specimens have a more or less juvenile appearance, the largest being only 24 Mill. in length; on account of the shape and sculpture I think they belong to var. *borneensis* or somewhat intermediate forms, between this variety and typical *A. striata*.

2. *Acmaea neglecta* n. sp. Pl. I, fig. 11.

Stat. 47. Bay of Bima near South fort. Shore. 3 Spec.
Stat. 86. Dongala, Palos-bay, Celebes. 36 M. Fine grey mud. 1 Spec. — Shore. 3 Spec.
Stat. 127. Taruna-bay, Great Sangir-island. Reef. 9 Spec.
Stat. 277. Kulewatti-bay, Dammer-island. Reef. 1 Spec.

Shell oval, broader behind, thin, depressed, anterior slope nearly straight, posterior and side slopes convex, the blunt apex placed at about $^3/_4$ of the total length, surface radiately many-striated, the striae are slightly irregular, at intervals stronger, more crowded at some parts of the shell, the interstices have nearly microscopical striae; the radiating striae are crossed by minute, scaly, concentric striae, much weaker and often obsolete in the interstices. Colour very variable, yellowish-white, often with brown rays and adorned with brown lines, which form a more or less complete network, many specimens with conspicuous white spots, especially at some distance from the apex. The dark rays may be wanting or broken up in dark spots. Interior of the shell bluish-white, porcellaneous, the margin more or less dark, according to the external colour-pattern; central area yellowish-brown.

Long. 20, lat. 16, alt. 5 Mill. (typical specimen).

Long. 18, lat. 16, alt. $7^1/_2$ Mill. (from Stat. 86).

Allied to the preceding species, but differing by the large number of striae, which are squamous and by the pattern of coloration. Perhaps it has hitherto been confounded with *striata*, with which it lives at the same localities.

The only specimen from Stat. 86 differs in shape from those from the other localities, being more conical and less elongate, as however it agrees in other respects, especially in colour-pattern, I think these differences may be individual.

3. *Acmaea saccharina* Linné.

Linné. Syst. Nat. Ed. X, p. 781, N° 660.
Rumph. Amb. Rariteitkamer, p. 121, Pl. 40, fig. B.
Reeve. Conch. Ic. Vol. VIII, Patella, fig. 72.
Pilsbry. Man. of Conch. Vol. XIII, p. 49, Pl. 36, figs. 60—62, 78; Pl. 18, figs. 31, 32; Pl. 24, figs. 12, 13.

Stat. 16. Bay of Kankamaraän, South coast of Kangeang. Shore. 6 Spec.
Stat. 60. Haingsisi, Samau. Reef. 1 Spec.
Stat. 125. Sawan, Siau-island. Reef. 1 Spec.
Stat. 127. Taruna-bay, Great Sangir-island. Reef. 1 Spec.
Stat. 131. Beo, Karakelang-island. 13 M. Mud and sand. 1 Spec.
Stat. 152. Wunoh-bay, N. W. coast of Waigeu-island. Reef. 1 Spec.
*Amboina. 1 Spec.

The specimen from Stat. 152 resembles the figure of var. *stellaris* Q. & G. but has no dotted central area, as represented in the figures of Pilsbry (l. c. pl. 36, figs. 63, 64, 67, 68); if this be the only distinguishing character, it seems to be of very little importance. The specimen has the same rounded, conspicuous ribs as in the original figure, but is much smaller and has a rather juvenile appearance. In some of the specimens from Stat. 16 I see a few brown dots in the central area, but they have no prolonged ribs.

Pectinodonta Dall.

1. *Pectinodonta orientalis* n. sp. Pl. II, fig. 8.

Stat. 88. 0° 32′ S., 119° 8′.5 E. 1301 M. Fine grey mud. 1 Spec.

Shell elongate-ovate, elevated, yellowish-white, anterior slope the shortest, nearly straight but slightly convex near the middle, more so near the margin, with a small concavity near the apex, posterior slope conspicuously convex, side slopes irregularly convex. Apex blunt, nearly smooth, save for very fine growth-lines and a few microscopic hairlines; nucleus placed at about $^{5}/_{18}$ of the length, deciduous. Sculpture consisting of more or less crowded, slightly wavy, radiating ribs or threads, wanting at irregular spaces; they are crossed by rather regular concentric lirae, slightly stronger than the radii, with very fine striae in the interspaces. Margin rather thick, the whole shell solid, slightly raised in the middle, so that if the shell be placed on a level surface, it rests upon the ends. Inside as far as visible, smooth.

Long. 18, lat. 13, alt. 9 Mill.

This shell may easily be distinguished from the only species that was known; it is higher with much coarser sculpture, and the posterior slope is much less convex and shorter in proportion to the whole length of the shell. The great depth at which it has been found, together with the external characters of the animal, which has a large head and no eyes, induced me to bring the species to the genus *Pectinodonta*, which was only known from the western Atlantic. Still I should have hesitated, were it not that the small specimens, enumerated sub N° 3, had produced the characteristic dentition of that genus.

2. *Pectinodonta alta* n. sp. Pl. II, fig. 9.

Stat. 59. Western entrance Samau-strait. 390 M. Coarse coralsand with small stones. 1 Spec.

Shell rounded-ovate, elevated, yellowish-white, solid, anterior slope very short, slightly convex, posterior slope very convex, side slopes moderately convex, apex rather blunt, slightly eroded, consequently without sculpture, placed of about $^1/_8$ of the total length. Sculpture consisting of rather flat, concentric lirae, which are considerably broader than the interstices, which on some parts have the character of mere striae. They are crossed by radiating striae, which are however rather obscure, probably on account of the somewhat worn state of the shell. Margin rather thick with the sides raised, though less than in the preceding species. Inside smooth, yellowish, with a large white central area.

Long. $8^1/_2$, lat. $7^1/_5$, alt. 5 Mill.

Differing from the known species by the more anterior position of the apex, the smoother sculpture, the height of the shell etc. I have located it in the genus *Pectinodonta*, on account of the same considerations as for the former species, as far as concerns the shell, but I must admit, that with such limpet-like species, certainty is only to be obtained by anatomical characters.

3. *Pectinodonta* sp. Pl. VIII, fig. 13.

Stat. 297. 10° 39′ S., 123° 40′ E. 520 M. Soft, grey mud. 15 Spec.

The specimens collected at Stat. 297 are very small, the largest being about $2^1/_2$ Mill. in length, nearly 2 Mill. in breadth, alt. $^3/_5$ Mill. They are oblong-ovate, much depressed, white, smooth to the naked eye or under a weak lens. Under a stronger lens they are concentrically striated and have a subcentral rounded nucleus, under the microscope they show fine hairlines, radiating from the nucleus and varying in length, but always short. They resemble much the apex of *P. orientalis*, but it is impossible to make out if they are identical, they seem to be more elongate. As the nucleus of *P. orientalis* was wanting, no comparison can be made. The shape of the head of the animal is very similar. The radula has given an imperfect result, the cusps being loosened by the action of caustic potash, but the isolated cusps are similar in general appearance to those of *P. arcuata* Dall ("Blake" Gastrop. pl. 35, fig. 3) they have however only 5 denticles at their proximal margin, whereas in *P. arcuata* they are much more numerous (11); this may depend partly on age, partly on specific difference. Though isolated, some of the pairs of cusps had their natural position, as shown in my figure.

Fam. Patellidae Guilding.

Patella Linné.

1. *Patella (Scutellastra) stellaeformis* Reeve.

Reeve. Conch. Syst. Vol. II, p. 15, Pl. 136, fig. 3.
—— Conch. Ic. Vol. VIII, Patella, fig. 48 (*pentagona*).
Pilsbry. Man. of Conch. Vol. XIII, p. 98, Pl. 17, figs. 25—27; Pl. 61, figs. 62—65.

Stat. 16. Bay of Kankamaräan, South coast of Kangeang Shore. 2 Spec.
Stat. 125. Sawan, Siau-island. Reef. 1 Spec.
Stat. 169. Atjatuning, West coast of New-Guinea. Reef. 1 Spec.

As I am in doubt if the figure of RUMPH (Amb. Rariteitkamer, Pl. 40, fig. C) really belongs to this species, like v. MARTENS (Die Mollusken etc. in RUMPH's Rariteitkamer, p. 16) has suggested, I have not cited that author. The figure resembles more a *Siphonaria*, but v. MARTENS assures that the Museum of Berlin possesses a similar form.

Helcioniscus Dall.

1. *Helcioniscus testudinarius* Linné.

LINNÉ. Syst. Nat. Ed. X, p. 783, N^0 674.
RUMPH. Amb. Rariteitkamer, p. 121, Pl. 40, fig. A.
REEVE. Conch. Ic. Vol. VIII, Patella, fig. 6.

Stat. 50. Bay of Badjo, West coast of Flores. Up to 40 M. Sand. 1 Spec.
Stat. 51. Madura-bay. Reef. 15 Spec. — Shore. 4 Spec.
Stat. 64. Kambaragi-bay, Tanah Djampeah. Reef. 8 Spec.
Stat. 152. Wunoh-bay, N. W. coast of Waigeu-island. Reef. 4 Spec.
Stat. ? 1 Spec.

It is strange that PILSBRY does not mention the granules on the radiating riblets, very conspicuous in younger shells, but also, though rarely, in adult ones, they are mentioned by LAMARCK, with the words "decussatim striata" (An. s. vert. Ed. Desh. Vol. VII, p. 532). This state of the shell has been figured by MARTINI (Conch. Cab. Ed. I, pl. 6, fig. 46).

2. *Helcioniscus enneagonus* Reeve.

REEVE. Conch. Ic. Vol. VIII, Patella, fig. 44.
PILSBRY. Man. of Conch. Vol. XIII, p. 152, Pl. 28, figs. 35, 36.

Stat. 152. Wunoh-bay, N. W. coast of Waigeu-island. Reef. 1 Spec.

*3. *Helcioniscus rota* Gmelin.

GMELIN. Syst. Nat. Ed. XIII, p. 3720.
REEVE. Conch. Ic. Vol. VIII, Patella, fig. 39 pars., fig. 56 (*petalata*), fig. 86 (*luzonica*), fig. 89 (*scalaris*).
PILSBRY. Man. of Conch. Vol. XIII, p. 144, Pl. 72, figs. 65—80.

*Amboina. (N. A. M.). 2 Spec.

Both specimens are young, and so it could not be made out, to which of the forms mentioned by PILSBRY they belong. The shells are dark chestnut in the centre. v. MARTENS (Die beschalten Gastrop. der deutschen Tiefsee-Exp. 1898—1899, p. 141) has listed the species as living in the Malay-archipelago.

APPENDIX

ZU DEN

PROSOBRANCHIATA

(PECTINIBRANCHIATA)

VON

R. BERGH.

Fissurellidae.

Scutus Mtf.

Scutus Mtf. Conch. system. II, 1810, p. 58.
Parmophorus Blainville. Bull. soc. philomat. 1817, p. 28. — Man. de malac. 1825, p. 501.

Diese Gattung ist anatomisch wenig untersucht. Quoy und Gaimard, v. Jhering und besonders Boutan (1885) haben Angaben über das Centralnervensystem geliefert, Pelseneer (1889) über den Mantel. Gray hatte (1857) eine rohe Abbildung des Raspelbaus gegeben; der Bau des Schlundkopfs wurde später durch eine Untersuchung von mir [1]) etwas genauer gekannt.

1. *Scutus unguis* (L.). Taf. III, Fig. 20.

Patella unguis L. Mus. Lud. Ulr. 1764, p. 69.
Parmophorus corrugatus Reeve. Conch. syst. pl. 139, fig. 1.
Scutus unguis (L.), var. c (*Parm. corrugatus* R.). Edg. Smith, notes on the sp. of the gen. *Scutus*. Journ. of concholl. II, 1879. p. (252—264), 261.

Am 9 Aug. wurde am Ankerplatz nördlich von Salomakië (Insel Damar) (St. 144) ein Individuum gefischt und nach dem Leben abgebildet. Ein anderes ganz ähnliches wurde am Riffe der Pepela-Bai an der Ostküste der Insel Rotti (St. 301) erbeutet. — Das erste wurde anatomisch untersucht.

Lebend hatte dasselbe eine Körperlänge von 5 cm. bei einer Breite bis 3,5; der Kopf

Anm. Durch einen unglücklichen Zufall sind die (37) Figuren, die Herr Prof. Bergh im Juni 1904 zur Erläuterung der nachfolgenden Beschreibungen eingeliefert hatte, verloren gegangen. Die im Text citirten Figuren der „Tafel III" beziehen sich auf Tafel III in R. Bergh, Die Nudibranchiaten der Siboga-Expedition. 1905. Die Redaktion.

1) R. Bergh, Opisthobranchiaten (Kükenthal). Abhandl. d. Senckenbergischen naturf. Ges. XXIV, 1. p. 124—127. Taf. XII, Fig. 16—21; Taf. XIII, Fig. 29—36 (*Sc. granulatus* (Blv.)).

mit den (8 mm.) langen Tentakeln ragte noch 5 mm. über dem Mantelrand hervor; das Mantel-(Schalen-)Loch 19 mm. lang bei einer Breite von 5. Die Farbe der Rückenseite war durchgehends schwarz und contrastirte stark gegen die weisse Schale.

Das aufbewahrte Individuum war 5 cm. lang bei einer Breite von 3,3 und einer Höhe von 1,7 cm., die mediane Kiemenspalte 5 mm. lang, das Mantelloch 18 mm. lang bei einer Breite von 4; die Breite des Mantelgebräms (an der Unterseite gemessen) 10 mm.; die Länge der Tentakel 7 mm.; die Länge des Fusses 4 cm. bei einer Breite von 2,2, seine Höhe in der Mitte der Länge 8 mm., die Länge des Schwanzes 5 mm. — Die Farbe der Rückenseite war schwarz wegen ganz dicht stehender, durch minimale gräulich-gelbliche Zwischenräume geschiedener flacher ganz kleiner Papel; die Unterseite des Mantelgebräms gräulichweiss, gegen den Rand schwärzlich. Der Kopf mit den Tentakeln ist schwarz. Die obere Seite des Fusses mitsamt den epipodialen Papillen (bräunlich-)schwarz; die Fusssohle weisslich.

Die Formverhältnisse die gewöhnlichen. Der Rücken schien dem unbewaffneten Auge eben; der Mantel deckte (hier) den grössten Theile der Schale. Dieselbe war von einer dünnen gelblichen Cuticula überzogen, stark, oben wie unten kalkweiss, von gewöhnlicher Schildform, 27 mm. lang bei einer Breite von 14 und einer Höhe von etwa 3,5 mm.; die Beschaffenheit der Rückenseite wie sonst bei dem *Scutus* beschrieben. Der Mantelrand zackig, die meisten Zacken grob und gerundet. Die Unterseite des breiten Mantelrandes ganz eben. Die lange Reihe der dichtstehenden epipodialen Papillen sich bis an den Tentakelgrund erstreckend, hinten geht die Reihe der eine Seite quer über den Schwanzgrund in die der anderen Seite über; die mitunter an Grösse alternirenden Papillen meistens etwa 0,75 mm. hoch. Der starke Kopf ganz unter den Mantel zurückgezogen; die Augenhöcker am Grunde der Tentakel wie gewöhnlich. Der sehr kräftige Fuss vorne unter dem Kopf 3 mm. hervorragend.

Der Boden der kleinen Kiemenhöhle vorne sammtschwarz, sonst schwarzbraun. Die zwei gleichgrossen Kiemen gelblichweiss, 12 mm. lang bei einer Breite am Grunde von 3,5; ihr letztes etwa Drittel freiliegend, etwas zugespitzt. Die abgestutzt kegelförmige Analpapille 4 mm. lang; rechts an ihrem Grunde die genito-urinäre kleine Papille.

Der Schlundkopf 7 mm. lang bei einer Breite von 4,5 und einer Höhe von 3 mm.; die denselben hauptsächlich bildenden Zungenknorpel mitsamt ihren hinteren Anhängseln wie früher beschrieben. Der vorderste Theil der Zunge ist von den grossen Mandibelplatten umfasst; dieselben waren von ovaler Form, im Ganzen ziemlich dünn und brüchig, 2,25 mm. lang; vorne etwas dicker und kastanienbraun, sonst mehr gelblich; ihre stabförmigen Elemente wenigstens bis 0,1 mm. lang bei einer Breite von 0,007 mm. Das Dach der Mundhöhle braun, von gelblicher Cuticula mit hohem farbigem Cylinderepithel überzogen. Längs der Raspel ein braungelbes, von der Cuticula gebildetes Band von etwa der halben Breite der Raspel. Die Raspel enthielt 11 gelbe Zahnplattenreihen und (unter dem Raspeldache) noch 16 fast farblose. Die bei einer Breite von 2 volle 13 mm. lange Raspelscheide hinter der Mitte ihrer Länge nach unten gebogen, ihr Ende geklüftet, zweihörnig, und die Hörner gegen einander gebogen; die Scheide enthielt 55 Zahnplattenreihen, von welchen die etwa 9 hintersten noch in Entwicklung begriffen; die Hörner des Hinterendes enthielten nur odontogene Zellen. Die Formel der Zahnplatten-Bewaffnung war: c. 50—1—4—I—4—1—50 c. Die Platten waren mit Ausnahme der

der vorderen Reihen der Raspel fast farblos. Die Breite der medianen war 0,29 mm. bei einer Länge von 0,30; die Länge der 4 paramedianen war 0,30 (bei einer Breite von 0,12)—0,35 (bei einer Breite von 0,08)—0,35 und 0,20(—0,25) mm.; die Länge der Seitenplatten war 0,5 bei einer Länge des umgebogenen Hakens von etwa 0,30 mm.; die Höhe der Aussenplatten stieg bis 0,60 mm. Die medianen Platten sowie die paramedianen waren von Form wie früher beschrieben, der umgeschlagene Vorderrand von jenen wie von zwei oder drei von diesen uneben, aber nicht denticulirt. Die Seitenplatten von gewöhnlicher Hakenform, mit der tiefen Kluft im Rücken und mit kurzem und spitzem, starkem Dentikel. Die Aussenplatten (Fächerplatten) auch wie früher beschrieben, die Randdenticulation vielleicht etwas stärker.

Die Speiseröhre, der Magen und der Darm schienen sich wie früher (l. c.) angegeben zu verhalten. Die tief braunschwarze Leber mit breiter medianer Einsenkung der oberen Seite, 20 mm. lang bei einer Höhe von 9 und einer Breite vorne von 12; die linke Hälfte vorne etwas mehr als die rechte vorspringend, das Hinterende der Leber gerundet.

Dieses Hinterende wird haubenartig von dem gelben Hoden umfasst, der lose an die Leber angeheftet ist. Derselbe maass (ausgestreckt) 20 mm. bei einer Höhe von 8,5 und einer Dicke von 4; seine convexe Hinterseite war eben, die Vorderseite zeigte eine quergehende Furche.

2. *Scutus* (*ungvis* (L.?)).

Auf Stat. 213 wurde „an der Ankerkette" ein Individuum erbeutet.

Dasselbe war (stark erhärtet) 26 mm. lang bei einer Breite von 13 und Höhe von 8; die Länge der Tentakel betrug 3, die Breite des Mantelgebräms 3 mm.; die Breite des Fusses 7, die Länge des Schwanzes 1,5 mm. — Die Farbe des Rückens war (gräulich-)schwarz, die Unterseite des Mantelgebräms gräulich; die Körperseiten des Fusses schwarz, nach oben mit der Reihe von epipodialen weissen Kegeln von einer Höhe von 0,4—0,5 mm.; der Kopf schwarz mit bräunlichem Vorderende, die Tentakel bräunlich, die Fusssohle weisslich.

Die Formverhältnisse die gewöhnlichen, nur schoss der Stirnrand des Mantels jederseits in einen gerundeten Lappen hervor, und der Rand desselben war nicht zackig. Der Rücken war eben, die Schale nur in einer Länge von 3 und in einer Breite von 0,5 mm. entblösst. Diese Schale war von gewöhnlicher Schildform, der Umbo doch vielleicht weiter nach hinten liegend, kalkweiss, 5,2 mm. lang bei einer Breite von 3.

Der Schlundkopf weiss, 4 mm. lang bei einer Breite von 2,5; die Scheide an Länge 8,25 mm. messend. Das Dach des Mundhöhle braun schmutzig, mit dichtstehenden, nicht recht steifen Dornen besetzt, die eine Höhe bis 0,4 mm. erreichten. An der Raspel und unter dem Raspeldache 24 Zahnplattenreihen; in der am Anfange des letzten Drittels nach unten gebogenen Scheide 64 Reihen, von welchen die 7 hintersten noch unreif; das Ende der Scheide auch in zwei kurze Hörner auslaufend, die aber divergirten. Die Länge der medianen Platten betrug 0,18 mm., die der Seitenplatten (in gerader Linie zwischen den Spitzen) 0,30, die der Aussenplatten bis 0,37, wozu noch eine Länge der umgebogenen Spitze von 0,06 mm. kam. Die medianen, die 4 paramedianen, die Seitenplatten und die Aussenplatten ganz wie oben beschrieben.

Die Leber braun, die Geschlechtsdrüse weiss.

Stomatellidae.

Miraconcha Bgh. N. Genus.

Corpus quasi nonnihil limaciforme. Notaeum anticum testa membranacea, magnopere irisante tectum. Operculum nullum.

Formula radularis: ∞—5—I—5—∞.

Die Stellung dieser Rhipidoglosse ist, hauptsächlich auch wegen der ungenügenden Untersuchung, etwas zweifelhaft, sie scheint zu den Stomatelliden zu gehören.

Ich habe nur eine Kieme gesehen. Auch die Form des Thieres oder wenigstens der hinteren Hälfte mit ihrer limacoiden Ähnlichkeit ist sonderbar, noch mehr die membranartige stark irisirende Beschaffenheit der Schale. Der zackige Rand, der den Schalenrand einfasst, repräsentirt wohl die epipodiale Linie. Ein Deckel fehlt.

3. *Miraconcha obscura* Bgh. n. sp.

Am 28 Aug. wurde (St. 172) am Ankerplatz zwischen der Insel Gisser und Ceram-Laut von Korallen- und Lithothamnion-Boden ein Individuum gefischt.

Dasselbe hatte in 4% Formol bewahrt eine Länge von 28 mm. bei einer Breite von 11 und einer Höhe von 10 mm., die Breite der Fusssohle in ihrer Mitte war 11 mm. Der Kopf hatte eine Länge von 5, die Tentakel von 6 mm. — Die Farbe war durchgehends schwärzlich-braun an der oberen Seite, die Fusssohle war weisslich.

Die Form war länglich, von der Mitte der Länge ab nach vorn und besonders nach hinten etwas verschmälert, im Ganzen etwas limaxartig, der etwas gewölbte Rücken fiel allmählig gegen den Fuss hinunter ab, dessen Rand fast nicht hervortrat. Der Rücken zeigte in seiner ganzen Ausdehnung (bis auf die Gegend der Schale) kleine gerundete und gerundet-eckige Felder von einem Durchmesser bis etwa 0,75 mm., welche leicht gewölbt waren und in der Mitte sich in einen spitzen Kegel erhoben. Von der Mitte des Rückens ab bis an sein Vorderende war der Rücken von einer ganz eigenthümlichen Schalenbildung bedeckt, die eine Länge von fast 10 mm. hatte und eine ähnliche Breite, und hinten eingerollt etwa wie bei *Haliotis* schien. Die membranartig dünne Schale zeigte einen äusserst starken Perlmutterglanz und trug Anwuchsstreifen gewöhnlicher Art; bei der leichtesten Berührung löste sich die Schale in Fetzen auf. Die Öffnung für die Schale war von einem weissen fein-zackigen Rande eingefasst und in der Nähe derselben waren die Hautkegel besonders gross, sich zu eine Höhe von 0,6 mm. erhebend, und immer mit dunkel-schwarzer Spitze. Die Kiemenspalte war ziemlich schmal, aus derselben ragte die Spitze der Kieme hervor. Der Kopf nicht klein; eine Querfalte an der convexen oberen Seite desselben erhob sich jederseits in einen zugespitzten Fortsatz, die Falte setzte sich jederseits nach hinten an das kurze Ophthalmophor fort, unter der Commissur trat der ziemlich allmählig spitz auslaufende Tentakel hervor. Der vorderste Theil des Kopfes war mit feinen Höckern bedeckt. Die Unterseite des Kopfes war etwas plan; das Vorderende war abgeplattet gerundet-dreieckig,

weisslich. Der Fuss war gegen seine Enden ein wenig verschmälert, besonders nach hinten, vorne gerundet.

Die Öffnung an den Ophthalmophorien war sehr deutlich.

Der Schlundkopf war von Form ganz wie bei anderen Rhipidoglossen, 4,5 mm. lang bei einer Breite von 2,5 und einer Höhe von 3. Im Innenmunde fand sich jederseits eine 0,75 mm. lange, braungelbe Mandibelplatte, von dicht gedrängten kleinen Kegeln gebildet, die eine Höhe bis 0,016 mm. erreichten. Die weissliche Zunge hatte vom Raspeldache ab eine Länge von 3 mm. bei einer Breite von 1,75, aber nur der letzte 1 mm. ragte frei, von der unteren Wand der Mundhöhle gelöst, hervor. An den Rändern der tiefen Zungenkluft zeigten sich die Ränder der gelben Raspel. An dieser letzteren fanden sich 17 Zahnplattenreihen, den 5 vordersten fehlte aber die ganze mittlere Parthie; die Raspelscheide war wie gewöhnlich lang. Die medianen Platten waren mehr lang als breit, die Länge 0,2 mm. betragend; sie waren vorne ganz schmal, hinten breit und gerundet, der kurze Haken an dem Grunde denticulirt. Die 5 Seitenplatten fast von derselben Grösse und Form, etwa 0,18 mm. lang, am Grunde des längeren Hakens jederseits 3—4 Dentikel. In der langen Reihe von Aussen- oder Randplatten wurden gegen etwa 200 Platten gezählt; sie waren (bis etwa 0,28 mm.) lang, aufrecht, an beiden Rändern der rechtwinkelig gebogenen Spitze gezähnelt, die inneren oben von etwas anderer Form als die mehr nach aussen liegenden. — Die milchweissen Stützknorpel der Zungenmuskelmasse 4 mm. lang, vorne verschmälert und nach innen gedreht; die Structur die gewöhnliche, so genannt knorpelige.

Weissliche Speicheldrüsen schienen an den Seitentheilen des Schlundkopfes vorzukommen.

Die Kiemenhöhle lang; die Kieme lanzetförmig, 12 mm. lang bei einer Breite bis 3,5, gelblichweiss; von den zwei Reihen von Blättern war die untere viel schmäler.

Die Eingeweidemasse erstreckte sich nur an die Gegend des Hinterrandes der Schale. Jene zeigte hinten eine ganz kurze und spitze Einrollung.

Eine einigermaassen eingehende Untersuchung war bei dem vorliegenden Material nicht möglich. Der hinten liegende Magen verlängert sich nach vorn in einen (8 mm. langen) Blindsack, dessen Ende spiralig eingerollt ist. Die Leber braun. Das weissliche Ovarium enthielt grosse Eizellen.

Gena Gray.

GRAY, A list of the genera of recent moll. Proc. Zool. Soc. 1847. p. 146.
GRAY. Proc. Zool. Soc. 1850. p. 37.
GRAY, Guide. 1857. p. 159, Fig. 85.
H. and A. ADAMS, The genera of recent moll. I, 1858. p. 437.

Corpus fere ut in Miraconcha. Notaeum anticum testa calcarea depressa, spira parva, apertura lata instructum; operculum nullum.

Formula radularis: ∞—5—I—5—∞.

Diese Form steht der Gattung *Miraconcha* sehr nahe, hat aber eine harte Schale.

Die Zungen-Bewaffnung ist der der *Miraconcha* sehr ähnlich.

4. *Gena nigra* (Q. et G.).

Stomatella nigra Quoy et Gaim. Voy. de l'Astrolabe, III, 1834. p. 307, Pl. 66bis, Fig. 10—12.

Von dieser Form lag nur ein einziges Individuum vor, in der Pepela-Bai an der Ostküste der Insel Rotti (St. 301) aus einer Tiefe von 27—45 M. gefischt.

Die von Quoy und Gaimard dargestellte Form schien hier vorzuliegen; dieselbe ist aber vielleicht von der *Gena nigra* von Reeve (Conch. ic. XIX, 1874. Gena, Pl. II, Fig. 11) verschieden.

Das aufbewahrte, zusammengezogene und erhärtete Individuum war 15 mm. lang bei einer Breite von 6 und einer Höhe bis 5 mm. Die Farbe (bräunlich-)schwarz, das Periostracum der Schale dunkel grau; die Fusssohle gelblichgrau.

Der Fuss überall bis an seine Ränder mit ganz feinen Wärzchen bedeckt; rechts und hinten finden sich an seinem oberen Rande neben der Schale einige (etwa 5) 1,75 mm. hohe schwarze Cirrhi; die Fusssohle mit schwacher medianer Längsfurche. Der Kopf (dem der *Miraconcha* ganz ähnlich) mit ganz feinen Höckern dicht bedeckt, der Vorderrand ganz fein zackig, die hinteren Spitzen etwas stärker, die obere Querlinie jederseits in zwei—drei Spitzen (die wahrscheinlich kurz-ästig gewesen sind) auslaufend. Die Tentakel (5 mm.) lang, an ihrem Grunde die kurzen Ophthalmophorien mit deutlichen offenen Augen; am Grunde des rechten hinten die zusammengefaltete 2 mm. lange Athemröhre. Die Schale 10 mm. lang bei einer Breite von 6 und Höhe von 2; kalkweiss, nicht ganz dünn, aber (jetzt) sehr zerbrechlich. Links ragte aus der Kiemenhöhle die Spitze der grössten Kieme hervor; der freie Theil derselben hatte eine Länge von 3 mm. bei einer Breite am Grunde von 2; das obere Blatt schmaler als das untere.

Der Schlundkopf wie gewöhnlich. Die Raspel 2 mm. lang, die Raspelscheide etwa 3 mm. lang; die letztere frei hervorragend, in 2 ziemlich langen, gebogenen Zipfeln herausgezogen. Die gelbliche Raspel mit 20 Zahnplattenreihen, in der Scheide kamen deren gegen 50 vor. Die Platten der mittleren Parthie der Raspel gelblich, die übrigen farblos; die Länge der medianen betrug 0,13 mm. bei einer Breite hinten von 0,06; die 5 Seitenplatten von etwa derselben Länge; die Höhe der innersten Aussenplatten etwa 0,12 mm., die Höhe der Aussenplatten bis 0,18 mm. steigend um nach aussen durch eine lange Reihe bis zu 0,08 mm. zu sinken. Die medianen Platten fast denen der *Miraconcha* ähnlich; die 5 Seitenplatten alle einander ähnlich, ihr Haken mit stumpfer Spitze und am Grunde derselben jederseits 2—3 Dentikel; die inneren Aussenplatten mit stark umgebogener Spitze, mehr nach aussen wurden sie ganz dünn. — Die weisslichen „Knorpel" der Zunge wie bei *Miraconcha*.

Der Zustand des Individuums gestattete keine weitere Untersuchung.

Marseniidae.

Lamellariacea Lovén. Öfvers. Vetensk. Ak. Handl. 1847. p. 192.

Marseniadae Bergh. Bidr. til en Monogr. af Marseniaderne. Kgl. Danske Vidensk. Selsk. Skr. 5 B. Naturvidensk. og mathem. Afdel. III, 1853. p. 243—359. Tab. I—V.

Marseniadae. Bergh, malacolog. Unters. IV. Supplementheft III u. IV, 1886—1887. p. 131—225. Taf. M—Z.

Die Familie umfasst die dioecischen Gattungen *Chelyonotus* (Sw.), *Marsenia* (Leach), *Marseniella* (B.) und *Marseniopsis* (B.); und die monoecischen *Marsenina* (Gr.) und *Onchidiopsis* (B.).

Marsenia Leach.

BERGH, Malacol. Unters. Supplementhefte III, 1886. p. 160(—173).

Animalia dioecia; notaeo sat laevi, plica inspiratoria brevi.
Pars inferior vasis deferentis in cavitate abdominali pro parte libera.

Eine Reihe von Arten ist aus den verschiedensten Meeresgegenden beschrieben (vgl. l.c. p. 162—163).

5. *Marsenia perspicua* (L.). l. c. 1905. Taf. III, Fig. 18.

Auf St. 273 Jedan, Aru-Inseln, 13 M. Sandboden und auf St. 310 in der Nähe von Sumbawa in 73 M. Tiefe auf toten Korallen, wurde je ein Individuum gefischt und lebend abgebildet.

Lebend hatte letzteres eine Länge von 3,2 bei einer Breite von 2,8 cm. Die Farbe der Rückenseite war röthlichgelb, am eigentlichen Rücken mehr röthlich.

Das aufbewahrte, weibliche Individuum zeigte sich 2,4 cm. lang bei einer Breite von 2 und einer Höhe von 1 cm. Die Farbe war durchgehends weisslich. — Die Formverhältnisse wie gewöhnlich; am sonst ebenen Rücken kamen hier und da kleine runde oder zugespitzte Höcker vor. Um das einzige Individuum zu schonen wurde die Schale nicht herausgenommen; sie bietet ja bei den Marseniaden kaum specifische Charactere.

Der Schlundkopf weisslich, 5 mm. lang bei einer Höhe von 3 und Breite von 4; die Raspelscheide rechts aufgerollt. Die Mandibelplatten gelb, von gewöhnlicher Form. An der schwarz eingefassten gelben Raspel der Zunge 21 Zahnplattenreihen; in der langen Scheide deren noch 39, von welchen die 3 noch unreif; die Gesamtzahl der Reihen somit 60. Die medianen Platten 0,24 mm. breit, ziemlich symmetrisch, jederseits mit 5—8 Dentikeln. Die lateralen Platten auch von gewöhnlicher Form, am oberen Schneiderand mit 15—20 feinen spitzen Dentikeln, am unteren mit 4—6 gröberen.

Die Speiseröhre 6 mm. lang, schwarz. Die Leber dunkel violetgrau.

Diese Form gehört wohl nur der so sehr verbreiteten typischen Art an [1]).

5. *Marsenia Sibogae* Bgh. n. sp.

Am Riffe der Insel Pajunga, Kwandang-Bai (St. 115) wurde ein weibliches Individuum gefischt.

Dasselbe hatte eine Länge von 22 mm. bei einer Breite von 17 und einer Höhe von 11; die Breite des Mantelgebräms war 7, die Länge der Tentakel 3, die des Fusses 12 bei einer Breite von 8, die Tiefe der Inspirationsfalte 4 mm. — Die Farbe der Rückenseite war bräunlichgrau (zum grossen Teil aber abgerieben); die Unterseite des Mantelgebräms dicht schwarzbraun gefleckt, die median vom Grunde des Hinterendes ausstrahlenden weissen Linien ungewöhnlich

1) Vgl. R. BERGH, Die Opisthobranchier der Sammlung PLATE. l. c. 1898. p. 563—(569).

stark und sich fast an das Vorderende fortsetzend; die Seiten des Unterkörpers schwarzgrau; der Kopf mit den Tentakeln weiss. Die Schale schimmerte nicht durch.

Die Formverhältnisse waren im Ganzen die gewöhnlichen, nur fanden sich in der Gegend des Vorderrandes der Schale 4 und in der des Hinterrandes 3 gerundete Knoten; die Ophthalmophorien waren sehr wenig ausgeprägt.

Die schöne, kalkweisse, feste Schale 15 mm. lang bei einer Breite von 10 und einer Höhe von 7; die Schalenöffnung 11 mm. lang bei einer Breite von 9, die Zahl der Windungen $2^1/_2$, die Spira ganz klein, starke Zuwachslinien in der letzten etwa Hälfte der letzten Windung. Eingeweide schimmerten nicht durch.

Der weisse Schlundkopf 5 mm. lang bei einer Breite von 4,5 und einer Höhe von 3. Die Mandibelplatten waren in dem vorderen Theile citrongelb und oben fast rothgelb, sonst fast farblos, 2,5 mm. lang. Die braungelbe Raspel der Zunge enthielt 16 Zahnplattenreihen, in der nach rechts aufgerollten (ausgerollten 10 mm. langen) Raspelscheide 38 Reihen, von welchen die 6 unreif; die Gesamtzahl der Reihen somit 54. Die Zahnplatten in den dickeren Parthien gelb; die Länge der medianen betrug 0,20 mm. bei einer Breite vorne von 0,04—0,05 und hinten von 0,18—0,20 mm.; die Länge der lateralen war 0,55. Die medianen Platten von gewöhnlicher Grundform, aber vorne stark verschmälert und glattrandig; die lateralen auch von gewöhnlicher Form, der hintere (obere) Rand des Hakens aber glatt, und am anderen kam nur ein starker, nicht spitzer Dentikel vor.

Der an der hinteren Seite der oberen Eingeweidemasse entblösste eigentliche Magen kugelrund, von 4 mm. Durchmesser. Die Leber dunkelgrau. — Die Eierstock röthlich gelblichweiss.

Die Specificität dieser Form kann kaum angezweifelt werden, dazu ist der vom dem der anderen bekannten Marsenien abweichende Raspelbau allzu verschieden [1]).

Chelyonotus (Swainson) Bergh.

Chelinotus Swainson. Treatise of malacology. 1840. p. 353.
Chelyonotus Bergh. Monogr. 1853. p. 340. — Malacol. Unters. Supplementheft III, 1—2. Die Marseniaden. 1887. p. 174—178, 193—226.
Coriocella Blainville. Dict. Sc. nat. XXXII. 1824. p. 259.

Animalia dioecia, Marseniis propriis similia, sed notaeo tuberculato et plica inspiratoria producta apice interdum bifida instructa.

Vas deferens in cavitate abdominali non liberum, sed in pariete abdominali omnino inclusum.

Der zwar ältere Gattungsname von Blainville hat kaum giltige Ansprüche (vgl. l. c. 1887. p. 174).

Die Chelyonoten sind eigentlich fast nur sehr grosse Marsenien mit stark vortretender Einathmungsfalte und mit grob-knotigem Rücken, im inneren Bau stimmen sie auch wesentlich mit den ächten Marsenien überein, nur ist der untere Theil des Samenleiters nicht theilweise frei, sondern in der Körperwand ganz eingeschlossen.

1) Die Form ist von der der beschriebenen *M. perspicua* des Siam-Meeres verschieden (vgl. Dan.-exped. to Siam. Gasteropoda opisthobranchiata. 1902. p. 213—214. Pl. III, Fig. 13, 14).

Die Gattung gehört den tropischen und subtropischen Meeresgegenden und enthält bisher kaum mehr als zwei Arten, falls dieselben wirklich specifisch verschieden sind.

1. *Ch. Semperi* Bgh. M. indic., philippinense.
2. *Ch. Tonganus* (Quoy et Gaim.). M. indicum.

6. *Chelyonotus Semperi* Bgh. l. c. 1905. Taf. III, Fig. 19.

R. Bergh, Malacolog. Unters. Heft IX, 1875. Taf. XLI, Fig. 9; — l. c. 1887, p. 175—176, 193—225. Taf. M, N, O, P, Q Fig. 1—6.

Am 16 Dcbr. wurden am Riffe von Tual, Kei-Inseln (St. 258) 13 Individuen gefischt, und das eine nach dem Leben abgebildet; später noch eins am Riff von Dobo, Aru-Inseln (St. 272), ferner eins bei Samalona bei Makassar (St. 73) sowie auf den Riffen von St. 250 Insel Kur und St. 279 Insel Roma; letzteres ist die var. *tessellata*.

Die 5 Individuen der erst genannten Station stimmten ganz mit dem typischen *Chelyonotus Semperi* überein, zeigten an der Rückenseite ausser den 5 grossen Buckeln zahlreiche, ganz geschiedene, auch sammtschwarze, grössere und kleinere, unregelmässige, wenig vortretende Facetten, fast ganz wie in den von Quoy und Gaimard gelieferten Figuren ihres *Chelyonotus (Sigaretus) tonganus*[1]). Bei den übrigen (10) Individuen kamen solche Facetten nicht vor, die Haut schien (durch starke Contraction?) eine zusammenhängende sammtschwarze Fläche zu bilden (l. c. Taf. III, Fig. 19).

Diese letzteren Individuen waren die grössten; ihre Länge betrug meistens 5—7 cm. bei einer Breite bis 3,2, die Höhe bis an die Spitze des medianen Rückenknotens 2,5 cm., die Höhe der Rückenbuckel betrug 8—10 mm.; die Länge des Fusses 2,9 cm. bei einer Breite von 8 mm.

Ein grösseres (weibliches) Individuum wurde geöffnet und der Schlundkopf untersucht.

Die Schale war gelblichweiss, ziemlich verkalkt, aber ganz zerbröckelt, ihre Formverhältnisse schienen die gewöhnlichen.

Die Länge des Schlundkopfs betrug 6 mm. bei einer Breite von 4 und einer Höhe von 3; die Raspelscheide war nach rechts flach aufgerollt. Das Dach der Mundhöhle schwarz. Die vorne braungelben, sonst gelben Mandibelplatten 2,25 mm. lang bei einer Höhe von 1,5, sonst ganz wie früher beschrieben. Die gelbe Raspel enthielt (innerhalb der braungelben Kante) 9 Zahnplattenreihen, unter dem Raspeldache fanden sich 6, und in der langen Raspelscheide 50, von welchen die 11 noch nicht fertig entwickelt; die Gesamtzahl der Reihen somit 65. Die Form der medianen so wie der lateralen Zahnplatten ganz wie früher beschrieben.

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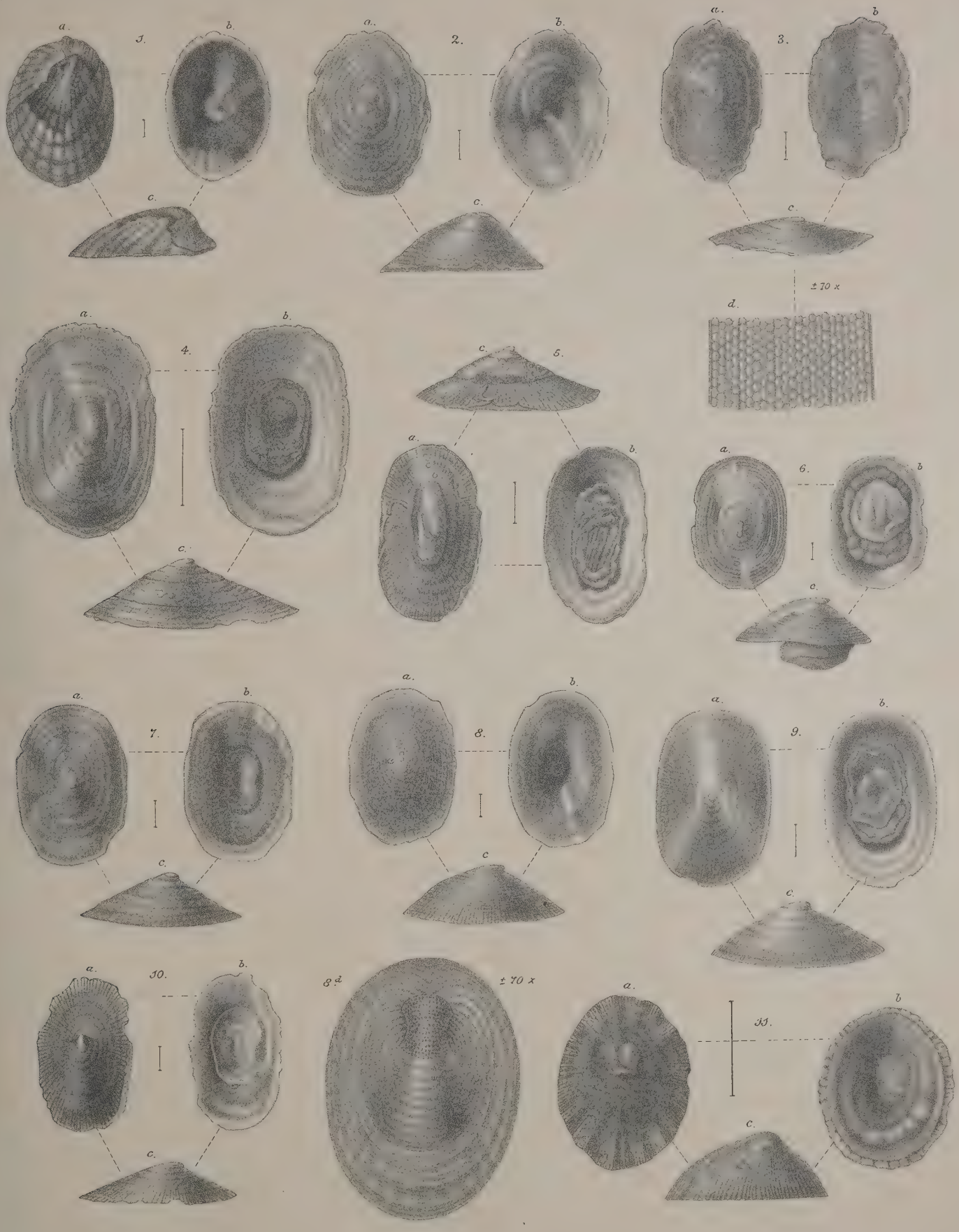
1) Voy. de l'Astrolabe. Zool. II, 1. 1832. p. 217—220. Pl. 66, Fig. 4, 8.
Falls eine Form ohne die grossen Rückenbuckeln wie die der französischen Verff. wirklich existirt, würde ein *Chel. Tonganus* (Q. et G.) sein specifisches Namen-Recht sich vindicirt haben.
Der von mir (l. c. p. 222) erwähnte *Chel. Tonganus*, var. *Berghi* (Desh.) scheint dem *Chel. Semperi* an zu gehören.

PLATE I.

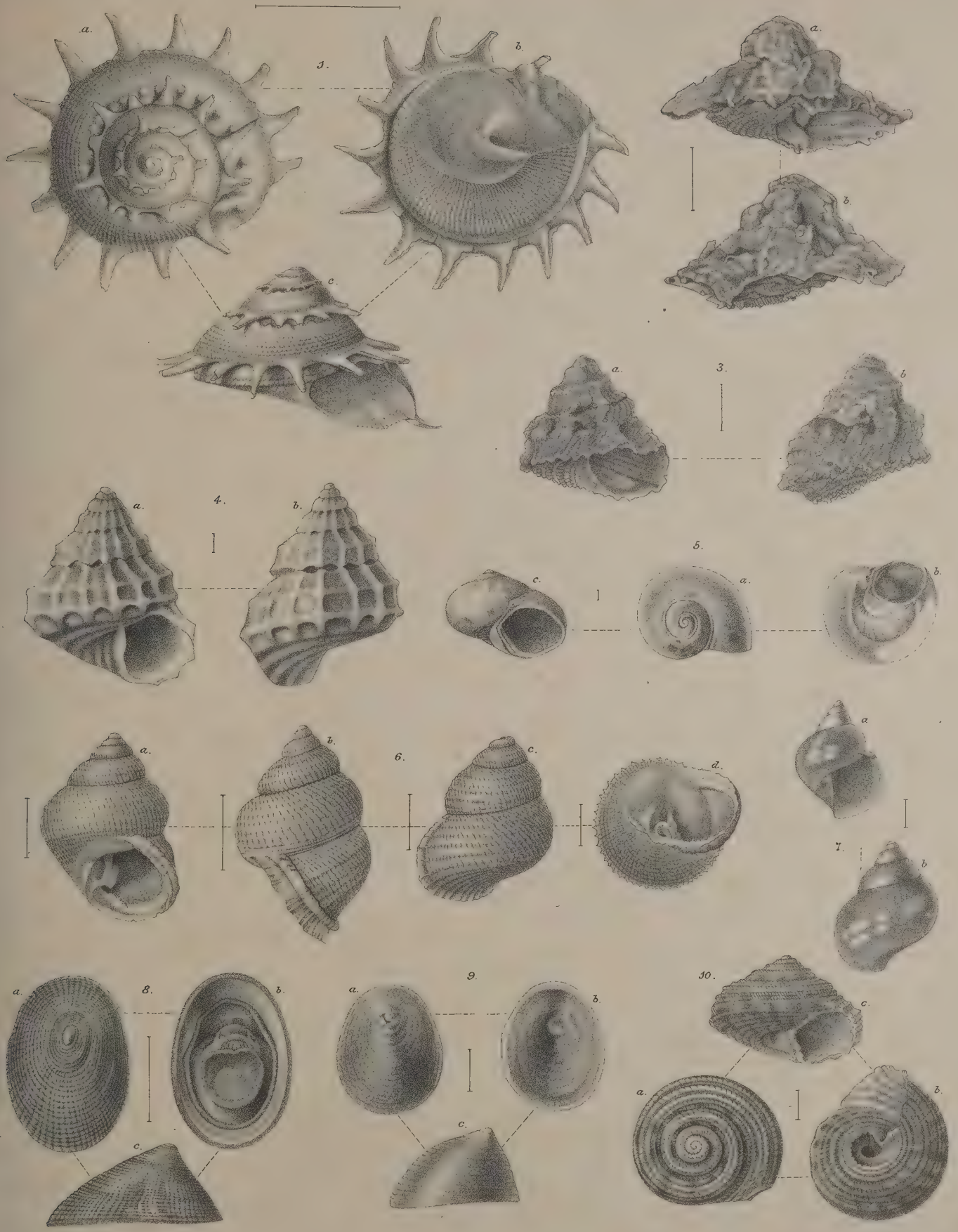
Fig. 1. *Phenacolepas radiata* n. sp.
Fig. 2. *Pseudococculina rugosoplicata* n. sp.
Fig. 3. *Pseudococculina granulata* n. sp.
Fig. 4. *Cocculina subquadrata* n. sp.
Fig. 5. *Cocculina oblonga.*
Fig. 6. *Cocculina cingulata* n. sp.
Fig. 7. *Cocculina ovata* n. sp.
Fig. 8. *Cocculina alveolata* n. sp.
Fig. 9. *Cocculina subcompressa* n. sp.
Fig. 10. *Cocculina striata* n. sp.
Fig. 11. *Acmaea neglecta* n. sp.



Fa. P. W. M. Trap impr.

PLATE II.

Fig. 1. *Astralium (Pseudastralium) abyssorum* n. sp.
Fig. 2. *Astralium lapillus* Reeve.
Fig. 3. *Astralium provisorium* n. sp.
Fig. 4. *Priotrochus incertus* n. sp.
Fig. 5. *Teinostoma sibogae* n. sp.
Fig. 6. *Danilia Weberi* n. sp.
Fig. 7. *Guttula sibogae* n. sp.
Fig. 8. *Pectinodonta orientalis* n. sp.
Fig. 9. *Pectinodonta alta* n. sp.
Fig. 10. *Monilea celebensis* n. sp.



Fa. P. W. M. Trap impr.

PLATE III.

Fig. 1. *Liotia armata* Adams, var.
Fig. 2. *Liotia lamellosa* n. sp.
Fig. 3. *Cantharidus pliciferus* n. sp.
Fig. 4. *Minolia ornatissima* n. sp.
Fig. 4*a*. *Minolia ornatissima* smaller specimen.
Fig. 5. *Solariella olivaceostrigata* n. sp.
Fig. 6. *Solariella zacalloides* n. sp.
Fig. 7. *Solariella mutabilis* n. sp.
Fig. 7*a*. *Solariella mutabilis* var. *laevior* n. var.
Fig. 7*b*. *Solariella mutabilis* var. *plicifera* n. var.
Fig. 8. *Solariella marginata* n. sp.

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PLATE IV.

Fig. 1. *Solariella callomphala* n. sp. 1*a* with *umbilicus* quite closed.
Fig. 2. *Solariellopsis calcarata* n. sp.
Fig. 3. *Solariellopsis limbifera* n. sp.
Fig. 4. *Solariellopsis pulchra* n. sp.
Fig. 5. *Solariellopsis spinulosa* n. sp.
Fig. 6. *Solariellopsis bicarinata* n. sp.
Fig. 7. *Solariellopsis multisquamosa* n. sp.
Fig. 8. *Solariellopsis muricata* n. sp.

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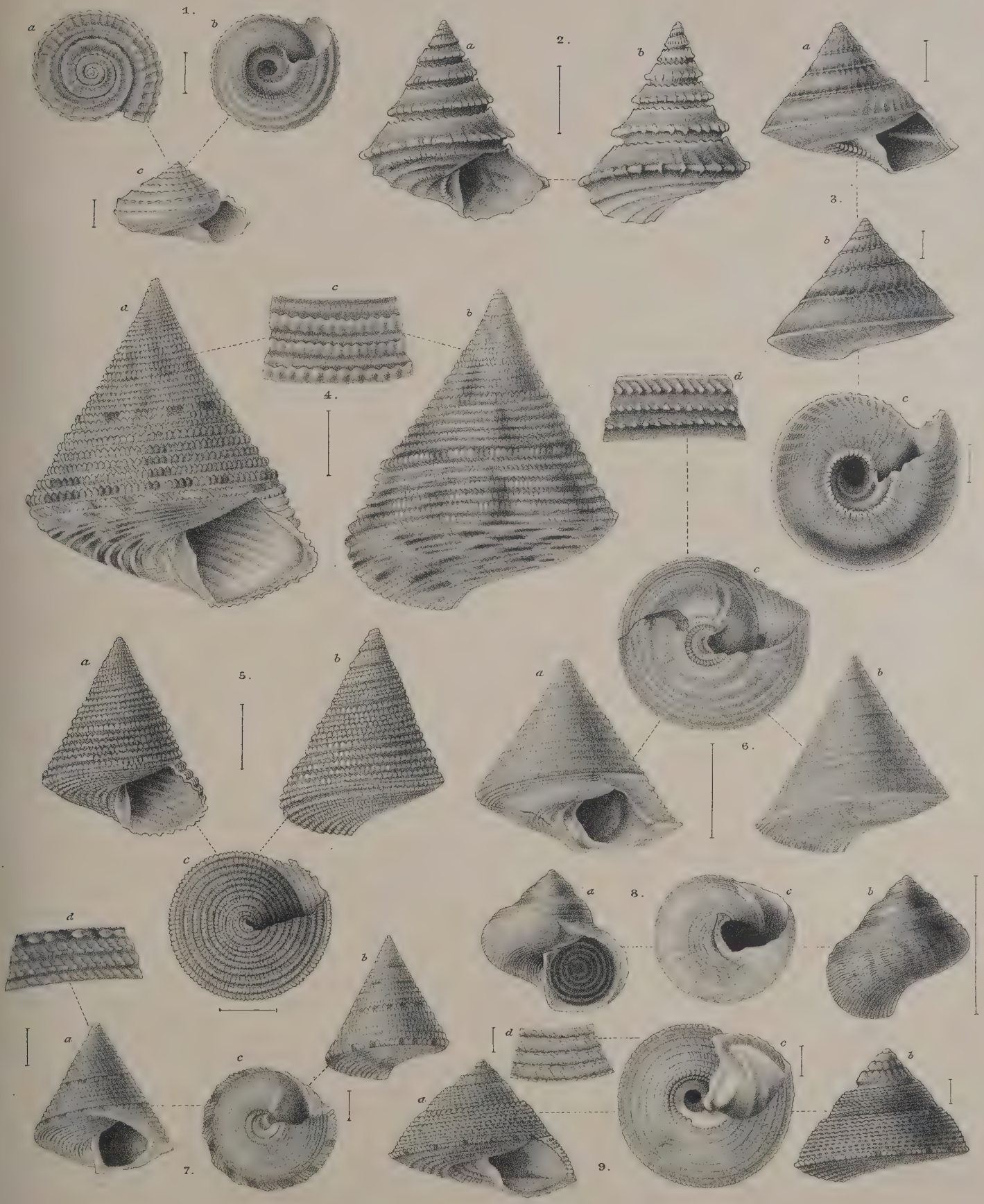
PLATE V.

Fig. 1. *Solariellopsis concavospira* n. sp.
Fig. 2. *Solariellopsis pagodiformis* n. sp.
Fig. 3. *Basilissa sibogae* n. sp.
Fig. 4. *Calliostoma rufomaculatum* n. sp.
Fig. 5. *Calliostoma simplex* n. sp.
Fig. 6. *Calliostoma multispinosum* n. sp.
Fig. 7. *Calliostoma quadricolor* n. sp.
Fig. 8. *Calliostoma virgo* n. sp.
Fig. 9. *Calliostoma expansum* n. sp.



Fa. P. W. M. Trap impr.

PLATE VI.

Fig. 1. *Calliostoma crassicostatum* n. sp.
Fig. 2. *Calliostoma monodon* n. sp.
Fig. 3. *Calliostoma squamicarinatum* n. sp.
Fig. 4. *Calliostoma nigromaculatum* n. sp.
Fig. 5. *Calliostoma cancellatum* n. sp.
Fig. 6. *Euchelus ringens* n. sp.
Fig. 7. *Ethalia misolina* Melv., var. *laevior* n. var.
Fig. 8. *Stomatia planulata* n. sp.
Fig. 9. *Scissurella maxima* n. sp.
Fig. 10. *Scissurella exquisita* n. sp.
Fig. 11. *Turbo gemmatus* Reeve, var.
Fig. 12. *Fissurella sibogae* n. sp.

Fa. P. W. M. Trap impr.

PLATE VII.

Fig. 1. *Macroschisma maxima* Adams, var. *elongata* n. var.
Fig. 2. *Glyphis subcalyculata* n. sp.
Fig. 3. *Puncturella gemmata* n. sp.
Fig. 4. *Puncturella gigantea* n. sp.
Fig. 5. *Rimula carinifera* n. sp.
Fig. 6. *Emarginula paucipunctata* n. sp.
Fig. 7. *Emarginula multisquamosa* n. sp.
Fig. 8. *Emarginula curvata* n. sp.
Fig. 9. *Emarginula sublaevis* n. sp.
Fig. 10. *Emarginula dubia* n. sp.
Fig. 11. *Emarginula foveolata* n. sp.
Fig. 12. *Emarginula clypeus* Adams.

Fa. P. W. M. Trap impr.

PLATE VIII.

Fig. 1. *Emarginula sibogae* n. sp.
Fig. 2. *Subemarginula plana* n. sp.
Fig. 3. *Subemarginula dubia* n. sp.
Fig. 4. Tooth of Radula of *Neritina brevispina* Lam., var. *mutica* Martens.
Fig. 5. Teeth of Radula of *Neritilia rubida* Pease.
Fig. 6. Teeth of Radula of *Pseudococculina rugosoplicata* n. sp.
Fig. 7. Teeth of Radula of *Pseudococculina granulata* n. sp.
Fig. 8. Teeth of Radula of *Cocculina subquadrata* n. sp.
Fig. 9. Teeth of Radula of *Cocculina oblonga* n. sp.
Fig. 10. Teeth of Radula of *Cocculina ovata* n. sp.
Fig. 11. Teeth of Radula of *Cocculina alveolata* n. sp.
Fig. 12. Teeth of Radula of *Cocculina subcompressa* n. sp.
Fig. 13. Teeth of Radula of *Pectinodonta* sp.

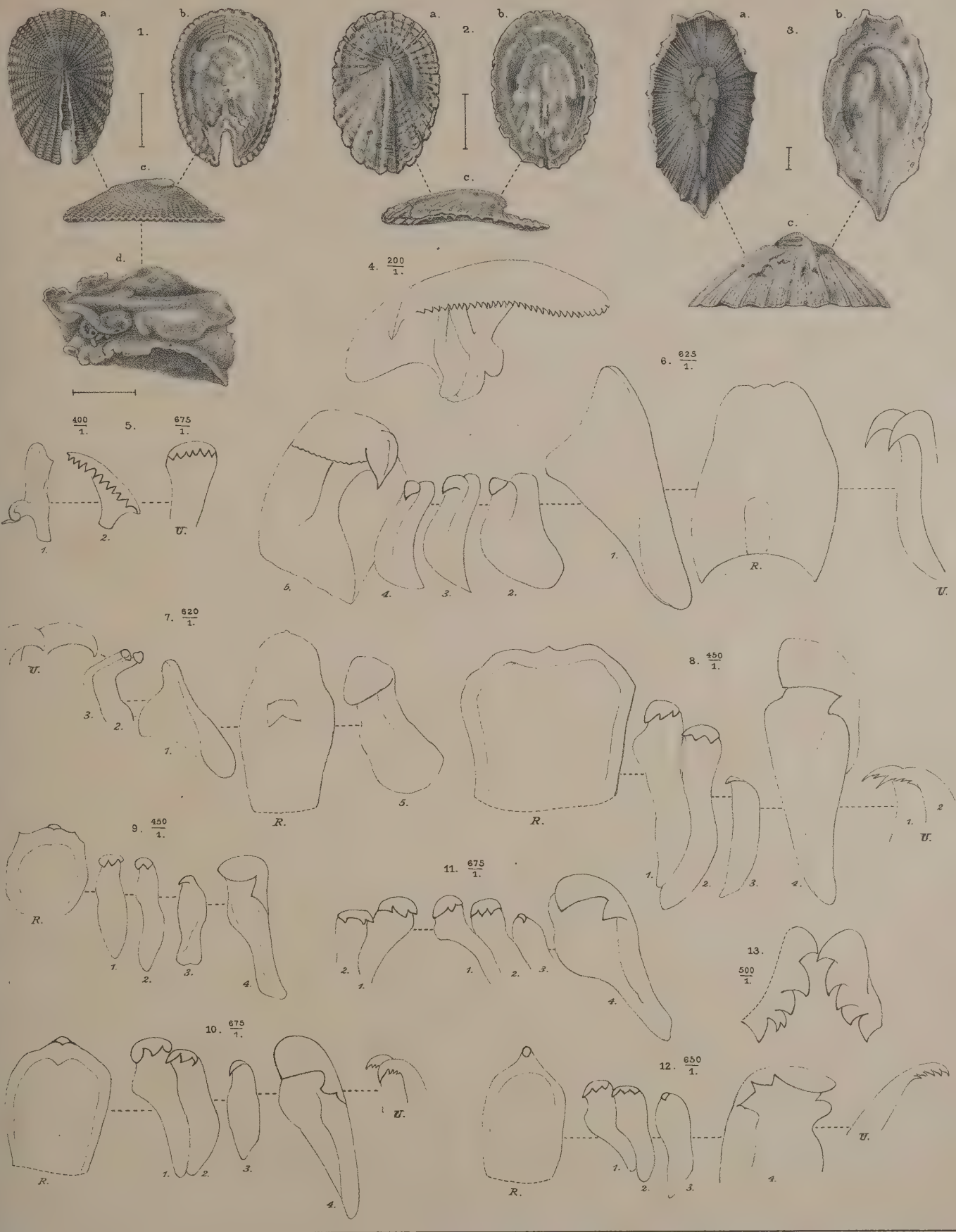


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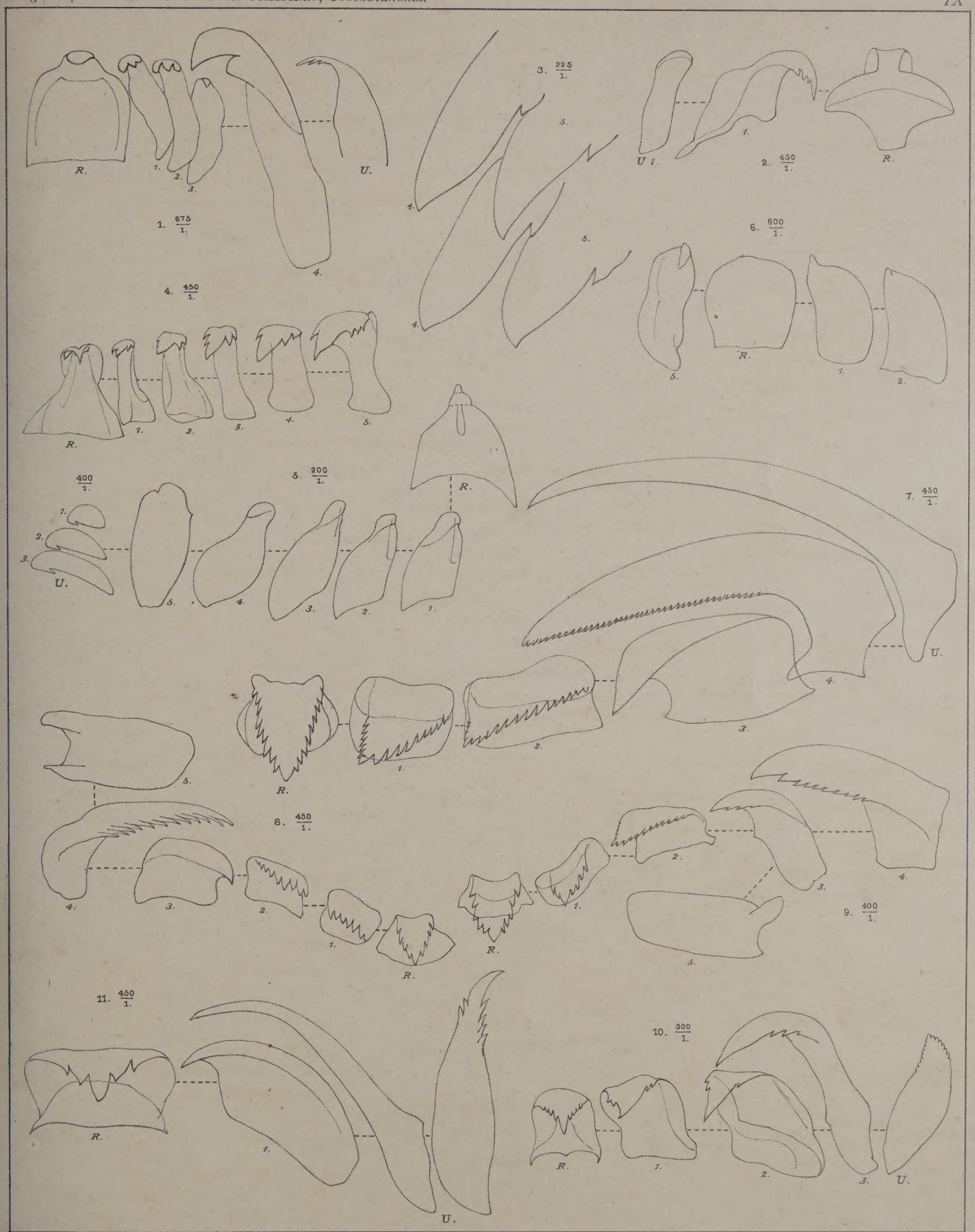
PLATE IX.

Fig. 1. Teeth of Radula of *Cocculina striata* n. sp.
Fig. 2. Teeth of Radula of *Leptothyra laeta* Montrouzier.
Fig. 3. Teeth of Radula of *Delphinula sphaerula* Kiener.
Fig. 4. Teeth of Radula of *Cantharidus Giliberti* Montrouzier.
Fig. 5. Teeth of Radula of *Monilea calyculus* Wood.
Fig. 6. Teeth of Radula of *Minolia ornatissima* n. sp.
Fig. 7. Teeth of Radula of *Solariella olivaceostrigata* n. sp.
Fig. 8. Teeth of Radula of *Solariella mutabilis* n. sp.
Fig. 9. Teeth of Radula of *Solariella callomphala* n. sp.
Fig. 10. Teeth of Radula of *Solariellopsis calcarata* n. sp.
Fig. 11. Teeth of Radula of *Guttula sibogae* n. sp.



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